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ASSERTIVE COMMUNITY TREATMENT FOR PEOPLE WITH PERSISTENT AND PARTICULARLY SEVERE MENTAL ILLNESS

Report submitted to the

Minister of Research, Science and Technology of Québec

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Agence d'évaluation
des technologies
et des modes
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MISSION

To support the *Ministre de la Recherche, de la Science et de la Technologie* and Québec's public health system decision-makers, namely the *Ministère de la Santé et des Services Sociaux*, through the assessment of technology

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and methods of intervention in health issues, notably the assessment of their effectiveness, safety, cost and cost-effectiveness, as well as ethical, social and economic implications.

To support the *Ministre de la Recherche, de la Science et de la Technologie* in the development and implementation of scientific policy.

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ASSERTIVE COMMUNITY TREATMENT FOR PEOPLE WITH PERSISTENT AND PARTICULARLY SEVERE MENTAL ILLNESS

As part of the current restructuring of mental health services, the closure of half of the psychiatric hospital beds in Quebec is now underway. To minimize the consequences of this closure on the recourse to hospitalization by those with severe mental illness – about 1-3% of the general population – it is necessary to develop and implement appropriate community support models.

With this perspective, Quebec's Health Technology Assessment Council (*Conseil d'évaluation des technologies de la santé*, or *CETS*) decided to evaluate the relevance, for the Quebec health care system, of a significant model of community care for those with severe and persistent mental illness in most need: namely, the Assertive Community Treatment model, ACT. *CETS* settled on this model after consulting key informants in the provincial mental health sector.

This report first examines published studies on this intensive case management model with respect to its effects on quality of services and its efficiency. The report also evaluates to what extent the model is applicable to the Quebec context, notably by identifying two local programs and appraising their degree of faithfulness to the ACT model and their net impact on direct costs. Finally, the report puts forward certain measures to facilitate the implementation of this approach in Quebec.

In conclusion, *CETS* believes that the ACT model deserves to be adopted on a wider scale, with concern for adherence to its characteristics. To this end, it suggests the development of a system of incentives and supports and the deployment of greater efforts in terms of research and evaluation. These efforts will make it possible to verify the effectiveness of existing programs, take appropriate corrective measures, and optimize adaptations of the model to the Quebec context.

In disseminating this report, CETS wishes to provide the best possible information to concerned policy-makers at various levels of the Quebec health services network.

Renaldo N. Battista
President

SUMMARY

Introduction

As part of the current restructuring of mental health services, the closure of half of the psychiatric beds in the province of Quebec is now underway. This closure most strongly affects the 1 to 3% of the general population with severe mental illness, who alone consume approximately 80% of psychiatric hospital days. It is generally agreed that community supports need to be developed in parallel with the closure of hospital beds. The support models that should be chosen—and how they should be implemented—remain, however, unclear.

In order to provide decision-makers in the health and social services network with relevant information on this issue, Quebec's Health Technology Assessment Council (*Conseil d'Évaluation des Technologies de la Santé*, or *CETS*) has evaluated the relevance, for Quebec, of a significant model of community care for people with severe and persistent mental illness: namely, the Assertive Community Treatment model, or ACT. *CETS* settled on this model after a consultation with key informants in the provincial mental health sector. Several considerations drew *CETS*'s attention to this model.

First, ACT targets a vulnerable subgroup of the mentally ill population, who are the most demanding in terms of services: a subgroup who are particularly put at risk by the current restructuring. Also, ACT's clinical effectiveness and cost-effectiveness have been well documented by a number of rigorous studies. In addition, published studies suggest that implementing ACT may reduce the need for hospital beds to such an extent that, far from increasing overall health care costs, ACT may actually reduce them. Finally, the model's relevance to the Quebec context, and the circumstances under which it should eventually be implemented, are not readily discernible, nor have they yet been studied in detail.

Main Features of the ACT Model

The main features of ACT can be summarized as follows:

- the client's treatment is provided by a team, not by a single case manager;
- the team assumes responsibility for the entire package of services that the client receives;
- the multidisciplinary team includes, preferably, a psychiatrist, nurses, psycho-educators, specialists in substance abuse, and social workers, each member of the team contributing his or her expertise and abilities to help each of the clients;
- services are intensive, with a staff:client ratio between 1:8 and 1:12;
- services are individualized, and are adapted daily to changes in the client's situation;
- most services are provided in the client's own environment, not in staff offices;
- the team sees clients evenings and weekends, and is also on call during the night;
- treatment is proactive rather than reactive; crises are anticipated and, whenever possible, prevented;
- in order to maximize the integration of services and treatment continuity, the team provides as many services as it can directly, to the extent that its multidisciplinary nature permits;
- the team attempts to promote as complete and satisfactory an integration of the client into the community as is possible;
- the team continues to serve clients for as long as can be justified clinically.

The model's effectiveness allows the achievement of clinically important gains while respecting the client's autonomy. Attention to medication compliance, within the context of a trusting and collaborative relationship with the client, is an integral part of the model. All the while seeking to directly provide the majority of required services, the team also seeks to strengthen the client's social network by increasing the scope and quality of his or her family and social relationships.

The ACT model has been successfully adapted to different situations. Originating at Madison's Mendota State Hospital in Wisconsin, the ACT model has been subsequently adopted by community organizations with no physician on staff. The current emphasis on including specialists in vocational rehabilitation and substance abuse has emerged from recent study findings. Other recent studies emphasize the importance of supporting families in their relationships with clients. The possibility of incorporating social skills training into ACT is now being explored. Thus, the ACT model is by no means cast in stone; rather, it represents an approach to supporting a subgroup of the mentally ill that can be adapted to different settings. Moreover, experimentation is leading to progressive refinements of the model.

Comparison with intensive case management

As several studies indicate, intensive case management and assertive community treatment can be quite similar. The essential difference is that, while the team's caseload is shared among virtually all assertive community treatment team members, each member of an intensive case management team has his or her own clients. Recent studies have found that outcomes of intensive case management programs can be quite similar to those of ACT programs. However, several clinical arguments, and some research evidence, support ACT over intensive case management; moreover, many experts would favor the shared caseload model of ACT over the individual caseload of intensive case management. That is the reason why the present evaluation by the *Conseil* bears on this particular model.

Summary of research findings

Since the 1970s, more than 30 experimental studies have been conducted in the United States, Canada, Australia, England and Sweden, comparing the results of ACT programs with those provided by outpatient clinics alone, or by other types of case management. Based on the results of these studies, it appears that ACT programs:

- tend to have a positive effect on clients' symptoms and subjective quality of life;
- contribute to greater client and family member satisfaction with respect to services;
- significantly reduce—in general by more than 50%—the number of hospital days.

Improved results tend to be associated with programs that exhibit a greater proportion of the characteristics of the ACT model.

ACT's target population

ACT is generally intended for people who: (1) are between 18 and 65 years old; (2) carry psychiatric diagnoses associated with psychotic episodes or perhaps personality disorders; (3) exhibit important functional deficits (in terms of employment, daily living skills, ability to maintain a social support network, or ability to act appropriately in public or with others); (4) fail to respond to traditional treatment methods; and (5) are subject to prolonged or repeated psychiatric hospitalizations. The presence of additional difficulties (e.g., substance abuse, trouble with the law, homelessness) increases the need for ACT.

Based on estimates from administrators of the two Quebec programs that have been studied, as

well as from administrators of ACT programs in the United States, between 0.7 and 1 person in 1,000 would benefit from such a program, or between approximately 5,000 and 7,000 people in the province of Quebec. This ratio could be higher in areas where the proportion of persons with severe mental illness is higher, such as lower income or inner city areas or near psychiatric hospitals. Approximately 1 to 3% of the general population have severe and persistent mental illness; ACT's target clientele therefore represents only between 2-10% *of that subpopulation*. The other 90% or more of persons with persistent and severe mental illness need a variety of other services that may include less intensive case management. This less intensive type of case management should therefore be seen as complementary—rather than an alternative—to ACT services.

Adaptability of the ACT model to the Quebec context

Can the ACT model be integrated into Quebec's mental health system? Several community-based, case management programs already exist in Quebec, most of them associated with community organizations. Many of these programs demonstrate considerable expertise in helping individuals with severe mental illness. We have nonetheless chosen to examine two hospital-based programs in the province, because of their better integration of medical care: this characteristic makes them more consistent with the ACT model. The two programs are the *Service d'accompagnement et de soutien communautaire* ("Community Support Service") in Hull, and the *Centre d'intégration communautaire* ("Community Integration Centre") in Shawinigan.

Both these programs can be viewed as moderately faithful adaptations of the ACT model. Both have produced substantial reductions in hospital days: in the samples we analyzed, 77% for the Hull clients and 37% for those in Shawinigan. However, even though the scientific literature would lead us to expect significant improvements in terms of symptoms, quality of life as perceived by the clients, and client and family satisfaction with services, it has not yet been possible to verify that these programs also produce such effects.

The adoption of ACT raises at least three other important questions: the nature of the staff-client relationship, changes in professional roles, and collaborative relationships (*partenariat*) among service providers.

Nature of staff-client relationships

Quebec law protects patients' rights to a considerable extent and citizens are increasingly aware of the importance of respecting patients' autonomy. Any form of community care—indeed any helping relationship toward a client—presents some risk of paternalism and coercion. ACT, however, presents a unique degree of risk in this regard, as it involves several staff members acting in concert in practically all aspects of a client's life.

However, at least four factors serve to allay fears one might have in this regard. First, excessive use of coercion tends to destroy the relationship between team members and the client, preventing the maintenance of a long-term relationship which is fundamental to ACT. Second, a limited use of coercion can be justified to the extent that it allows a client to achieve and maintain a lifestyle which he or she, on the whole, prefers to the available alternatives (for example, control by the team over part of the client's income may be necessary for the client to be able to keep independent lodging). Third, the clinical effectiveness of the model makes it possible to achieve significant clinical gains without needing to resort to explicit or implicit means of coercion. Finally, any risks of paternalism and coercion can be reduced by hiring empathetic staff

who can identify with the clients. The inclusion on the team of a client (or ex-client) in a staff role, a state-of-the-art practice in the United States, also helps develop such an attitude on the team.

A need to define new professional roles

The effective functioning of an ACT team requires that each nurse, for example, be willing to carry out tasks that go beyond traditional nursing roles. This requires a revision of traditional job descriptions. On the one hand, responsibilities to be shared by all staff must be spelled out: on the other, the unique contributions of each profession need to be recognized. Adjustments to collective agreements must also be agreed upon with labor unions, in order to allow more flexibility in staff schedules. Also, the role of a psychiatrist on an ACT team is different from any that psychiatrists in Quebec have had to assume until now: he or she spends part of his or her time meeting clients where they live; shares clinical decision-making authority with the team coordinator, who is not a physician; and participates with other team members in interventions with a variety of organizations (CLSCs [Community Health and Social Service Center], etc.). These differences present real difficulties and are sure to engender some resistance.

Respective roles of ACT and other services

Two seemingly opposing principles direct the relationship between an ACT program and other services. On the one hand, the team seeks to maximize continuity and integration among services, which leads it to provide as many services as possible itself. In particular, this principle implies that the team assumes, to a very large extent, the functions of an outpatient clinic, substance abuse treatment center, supervised housing and vocational rehabilitation services (the team thus relies on supported housing and employment approaches).

On the other hand, the team seeks the greatest possible integration of the client into the community. Thus it encourages the construction or reconstruction of a social network, not only through the cultivation of improved relations with family members, neighbours, merchants, etc., but also through involvement with a variety of community organizations: self-help groups, Alcoholics Anonymous or such groups as needed, community organizations intended to foster artistic self-expression among clients, etc. Thus, even though an ACT team will interact with fewer other services than other programs that do not seek to provide so many services directly, ACT really is not incompatible with the emphasis on fostering collaborative relationships among services that is a cornerstone of health and social service development in Quebec (*partenariat)*. The overarching objective of that emphasis (of *partenariat)* is to increase the continuity and integration of care. The pursuit of that same objective, in order to better serve clients, is precisely the reason why ACT provides so many services directly. The method used, however, is more radical (and, it is argued, more effective in this case) than that of seeking to work in partnership with other service providers.

Economic effects of ACT in the province of Quebec

An ACT program with a half-time psychiatrist, staffed with professionals paid according to institutional salary scales, would cost the health and social services system approximately $8,000 per client per year, including medical services billed by the psychiatrist to the Health Insurance Board (RAMQ). This amount can, however, vary considerably depending on staff salaries. Although the cost appears high, any area with a sufficiently large and geographically concentrated population would actually achieve substantial savings, over the medium or long term, for the health and social services sector and the

provincial government. These savings arise mostly from a marked reduction in hospital days. In the short term (i.e., one year or less), some transitional financing would be required.

Respective roles of hospitals, local health and social service centers (CLSCs) and community organizations in the development of ACT services[1]

There is much at stake in the definition of the roles of hospitals, CLSCs and community organizations in the development of ACT services in Quebec. It is up to the regional health and social service boards, on the basis of the orientations given by the Ministry of Health and Social Services, to take appropriate initiatives and decide how to allocate resources among these various service providers, in order to assure that ACT services are developed in each region.

If the ACT model described in this report includes a psychiatrist and nurses, this does not mean that ACT programs should necessarily be developed out of hospitals or CLSCs. The literature does not clearly indicate which organizational setting is most favorable to the development of ACT services. What does emerge clearly from the literature is that, the closer to the ACT model one comes *overall*, the better are the results.

[1] In the province of Quebec, the government operates health and social service centers, known as CLSCs (*Centre local de services communautaires*), which typically have physicians and nurses on staff. There are many more CLSCs than hospitals; indeed in many rural areas a CLSC is likely to be by far the closer medical presence. What is referred to here as community organizations are private, not-for-profit organizations that are funded partly out of the provincial budget for health and social services, and partly out of private donations. Many community organizations seek to help individuals with severe mental illness, operating from a wide variety of philosophical perspectives and using many different models (self-help groups, family support organizations, as well as community-based case management).

Towards the development and dissemination of programs based on the ACT model

Research findings on the ACT model, and the analysis carried out for this study, present Quebec's health and social service sector decision-makers with a two-fold challenge: on the one hand, to determine how the ACT model can be adapted and improved to maximize its effectiveness as an element of the mental health sector in Quebec; on the other hand, to take into account the natural resistance to the changes in work environments and relationships that will arise, no matter what adaptations are deemed best. Adoption of the following measures would facilitate the development and dissemination of programs based on the ACT model:

- *Issue guidelines describing the characteristics, principles and target population of the ACT model.* A number of American states have already issued such guidelines; the province of Ontario also did so, in July 1997.

- *Make use of financial incentives.* Financial incentives could be used to encourage the implementation of new programs. Initially, financing would only be allocated to programs that commit to the ACT model, and that particularly target people who are frequently re-hospitalized.

- *Give preference to programs whose members can collaborate effectively with hospital staff.* The large number of psychiatric beds in Quebec support long lengths of stay rather than high admission rates. Appropriate discharges for patients can be organized more quickly if the ACT team has a good working relationship with the hospital staff.

- *Give ACT teams technical support by providing access to clinical consultants.* Clinical consultants, hired by the health and social

service sector, could provide assistance as teams are being established, as well as in later years, in order to foster better understanding of the model and closer adherence to its standards. Teams identified as especially effective could also be given significant training responsibilities.

- *Evaluate programs on a regular basis.* Programs should be evaluated, every year at first, in order to encourage continuous quality improvement.

- *Increase financing for research into ACT programs and their variants.* Increased financing for rigorous field research would assist in developing adaptations of the ACT model that would be as effective and appropriate as possible within the Quebec context.

Conclusions

The results of this evaluation can thus be summarized as follows:

- Assertive community treatment is intended to serve only adults with severe mental illness who have considerable difficulties, most often manifested by psychotic symptoms, poor response to usual services, and repeated hospitalizations. This population represents only 0.7 to 1 person in 1,000 on average – thus a small minority, 10% at most, of those with severe mental illness.

- Research has shown that ACT provides significant benefits to such clients and their families, while substantially reducing hospitalizations.

- The ACT model can be adapted to different situations, and continues to evolve, as research reveals new ways of improving it.

- There are already several programs in Quebec that have been influenced by the ACT model. At least two of these, examined as part of this study, can be viewed as good adaptations of this model and appear to have contributed to reduced hospital days to a significant extent.

- In implementing ACT programs, care must be taken to minimize the potential for paternalism and coercion.

- An ACT team requires that staff, including psychiatrists, adopt new professional roles.

- An ACT team seeks to provide as many services as possible directly to the client. It also aims, however, to foster the client's integration into the community, including through referrals to various community organizations or other service providers.

- Implemented in an area with a sufficiently large population base, ACT achieves significant reductions in health and social service costs.

- Available evidence does not suffice to indicate whether ACT teams should be based in hospitals, CLSCs, or in community organizations. The most important principle is that, *overall*, the program be as close to the ACT model as possible.

- A number of technical support, organizational and financial means are proposed to facilitate the introduction of ACT services in Quebec. The development of research and evaluation concerning ACT and related services would also help to optimize the organization and functioning of such programs.

In conclusion, the *Conseil* believes that this model deserves to be adopted on a wider scale, with concern for adherence to its characteristics. To this end, it suggests the development of a system of incentives and supports and the deployment of greater efforts in terms of research and evaluation. These efforts will make it possible to verify the effectiveness of existing program take appropriate corrective measures, and optimize adaptations of the model to the Quebec context.

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1. INTRODUCTION

Ongoing reforms in the mental health services sector are leading to the rapid closure of half of the psychiatric beds in the province of Quebec [77]. Those most affected by the closures are the 1 to 3% of the general population with severe and persistent mental illness, who alone consume approximately 80% of psychiatric hospital days. It is generally agreed that the closing of hospital beds should be accompanied by a corresponding development of community supports [77,78]. However, the exact nature of the support models to be chosen, and the criteria governing their implementation, remain unclear.

In order to provide decision-makers in the health and social services network with relevant information on this issue, Quebec's Health Technology Assessment Council (*Conseil d'évaluation des technologies de la santé*, or *CETS*) has evaluated the relevance, for Quebec, of a significant model of community care for people with severe and persistent mental illness: namely, the Assertive Community Treatment model, or ACT. *CETS* settled on this model after a consultation with key informants in the provincial mental health sector. Several considerations underlay this choice.

First, ACT targets a vulnerable subgroup of the mentally ill population, who are the most demanding in terms of services: a subgroup who are particularly put at risk by the current restructuring. (As is made clear in section 4 of this report, this subgroup represents fewer than 10% of the population with severe and persistent mental illness). Also, ACT's clinical effectiveness and cost-effectiveness have been well documented by a number of rigorous studies, as reflected in the number of jurisdictions outside Quebec who have adopted the model in recent years.

In addition, published studies suggest that implementing ACT may reduce the need for hospital beds to such an extent that, far from increasing overall health care costs, ACT may actually reduce them. Finally, the model's relevance to the Quebec context, and the circumstances under which it should eventually be implemented, are not readily discernable, nor have they yet been studied in detail. A recent report by the *Comité de la santé mentale du Québec* (Quebec Mental Health Committee), entitled *Défis de la reconfiguration des services de santé mentale* (Challenges arising from the reconfiguration of mental health services), does discuss this model to some extent, but its much broader scope does not allow for the level of detail represented by the analysis in the present report [28].

The goals of this study are then:

- to examine the relevant literature in terms of how ACT affects the quality and cost-effectiveness of services provided;
- to evaluate to what extent the model is applicable to Quebec; and
- if the model does appear applicable, to ascertain, from the relevant literature as well as epidemiological and economic data, indications as to the criteria that should govern its implementation in Quebec.

2. NATURE OF THE MODEL

ACT's target clientele comprises a subgroup of the population with severe and persistent mental illness who require the most services. The ACT model was originally developed in the 1970s, in Madison, Wisconsin [102,108]. The primary objective of its initial developers, Drs. Leonard Stein, Arnold Marx (two psychiatrists) and Mary Ann Test (a psychologist), was to reduce rehospitalizations as much as possible by successfully integrating psychiatric patients into the community. Since then, the ACT model has been widely disseminated: the United States now counts over 400 ACT teams [32, 75] and a growing number exist in Canada [62]. ACT teams have also been developed in England [67], Australia [54,55], and Sweden [1].

2.1 CHARACTERISTICS OF THE MODEL

The main features of ACT can be summarized as follows:

- the client's treatment is provided by a team, not by a single case manager;
- the team assumes full responsibility for all aspects of the client's treatment, either by providing services directly or, when unable to do so, by ensuring their provision;
- the multidisciplinary team includes, preferably, a psychiatrist and nurses, psycho-educators, and specialists in substance abuse, vocational rehabilitation and social work, each team member applying his or her particular expertise and abilities to help each of the clients;
- services are intensive, with a staff:client ratio ranging from about 1:8 to 1:12;
- services are individualized and are adapted daily to any changes in the client's situation;
- interventions are primarily carried out in the clients' own living environments (*in vivo*), and not in staff offices;
- the team provides services evenings and weekends, and provides services at night when needed;
- services are proactive rather than reactive: crises are anticipated and, whenever possible, prevented;
- in order to maximize the integration of services, the team provides as many services as possible directly, which its multidisciplinary composition allows;
- the team seeks to facilitate as complete and satisfactory an integration of the client into the community as possible;
- the team continues to provide services to a client as long as this can be justified clinically [102, 105].

Clinical experience as well as various experimental studies, described in the scientific literature, allow us to further specify the characteristics of the ACT model.

2.1.1 Team composition

An ACT team preferably includes a part-time psychiatrist [2,61,101].[1] It should include at least one nurse or psychiatric nurse as well as social workers, psycho-educators, and vocational rehabilitation and substance abuse specialists. The

[1] We say "preferably" to leave room for adaptations of the model similar to the "Bridge" program in Chicago (see below). Note, however, that the integration of medical treatment and rehabilitation services within the same team, which requires the inclusion of a psychiatrist and nurses in the team, is an important characteristic of high-fidelity ACT programs.

regular presence at the office of a secretary/receptionist is necessary to serve as a contact person for clients and others while staff are in the field, and to facilitate exchanges within the team and also with others [2,101]. It is desirable, as well, that the team include a client: this helps foster an open and non-coercive approach (see section 5.1), and this person can often communicate more effectively with the other clients than can professional staff. The total number of staff, not counting the receptionist or psychiatrist, should be about 8 to 12 [101]. Fewer staff makes it impossible to provide coverage outside of normal office hours (see below). Greater staff numbers lead to having such a large number of clients that it becomes impossible for each staff member to know them all.

2.1.2 Shared caseload

Having a shared caseload means that, in most cases, each client will know and benefit from the support of every staff member. A ratio of 8 to 12 clients per staff person (excluding the psychiatrist and receptionist), combined with the shared caseload approach, makes it possible to give every client highly individualized services that encompass treatment, rehabilitation and support, and that take advantage of the specific skills of every team member. This requires continuous exchanges among team members, preferably through daily team meetings. It is preferable that the team be coordinated by a staff person who also provides direct services, so that the coordinator has some direct knowledge of every client.

2.1.3 Daily functioning

In general, services are provided in the client's own environment, rather than staff members' offices. The team's presence in the community is reinforced if the team's offices are in a building not connected to a hospital and located in its clients' neighbourhood. The team's job is to provide practical training in life skills such as cleaning and cooking, to respond to crises (such as evictions, arrests, psychiatric relapses, etc.), accompany the client to legal or government appointments, provide (sometimes daily) assistance in taking medications, provide various clinical services directly to the client, and advocate on behalf of the client with landlords, employers and other members of the community. In order to be with the clients in all significant aspects of their lives as well as during moments of need, team members should be available evenings and weekends. If a member cannot be on call during the night, the ACT team should work in close collaboration with a 24-hour crisis-intervention centre. The client should thus be able to count on help within a few hours at least, if not immediate help.

2.1.4 Relationship with other services

In order to maximize coordination of services, the team tries to provide as many services as possible directly to the client, using outpatient clinics as little as possible. As a rule, clients are not placed in supervised housing facilities; rather, they are given the necessary support to live on their own. Similarly, sheltered workshops are avoided in favour of a supported employment approach: clients are placed in competitive employment settings (generally, however, for 5 to 20 hours a week) and given the necessary support.[2] The team, which should include at least one substance abuse specialist, seeks as much as possible to help substance-abusing clients to gain control of their consumption of substances, without relying on a separate, specialized program (except for an occasional referral to a program such as Alcoholics Anonymous, in the context of an individualized treatment plan).

[2] In concrete terms, this means that the team should include one or two members who focus on the client's vocational functioning, and who do not get very involved in crisis intervention.

If the family is able and willing to be supportive, an attempt is made to involve relatives in the follow-up process [70]. Depending on the client's interests, participation in social and cultural activities is also encouraged (for example, a self-help group, or a community organization that provides art therapy). A variety of other resources can also be called upon, according to each client's needs. For example, the team could arrange home visits by a CLSC (local community health and social service centre[3]) nurse for a client with physical health needs for which such visits are appropriate. The issue of linkages between ACT teams and other resources is discussed in section 6.

2.1.5 Treatment philosophy and objectives

An ACT team seeks to increase client autonomy and integration into the community. To reach these goals, the team tries to: (1) help the client develop daily life skills (such as preparing a meal); (2) promote a responsible attitude (vis-a-vis employment, for instance) and an awareness that choices have consequences; (3) assist the client in taking medication, perhaps necessitating daily home visits; [4] (4) accompany the client in his or her attempts to obtain legal or government services (such as welfare payments) and (5) meet with landlords, current or potential employers, store-owners, neighbours, etc. to help them accept and learn to react appropriately to the client's behaviour. The idea is to give the individual all the support needed, without giving so much as to foster dependency. Building or rebuilding a social network is a major factor in promoting the client's eventual independence. Finally, as will become clearer below, the model leaves considerable latitude in the nature of staff-client relationships.

2.1.6 A continuously evolving model

The ACT model has been implemented in a variety of environments with consistently positive results. Originating from a psychiatric hospital setting, it has been adapted by community organizations, with a team that does not include a physician: the "Bridge" version of the model is named for the first such program in Chicago and there have been many others since [108, 111].[5] It has also been adapted to rural settings [94]. The model has continued to evolve in recent years:

- The emphasis on including a client who works on the team as a staff member, as well as specialists in substance abuse, reflects the findings of recent studies [41, 43, 44, 49, 75].

- There is growing emphasis on integrating vocational rehabilitation into the team's mission. The best way to make this concrete is,

[3] CLSCs (the acronym stands for *Centre local de services communautaires*) are public centres, each serving a defined geographic area, that provide primary care as well as a variety of home care and other services. Each has its own board of directors. CLSCs have considerable latitude to define the particular services that they offer in their area.

[4] The importance attached to the taking of medications as prescribed is practically a universal characteristic of programs studied in the literature and implemented to date. Note, however, that increasing concern for the respect of clients' rights—in the US as well as in Quebec—also affects the approaches used to foster the taking of medications, such as the development of a trusting relationship with the client (sometimes over a long period of time), negotiations on dosage, listening and taking into account client complaints about side-effects, etc. [34,101].

[5] Today, there still exist two distinct currents in the dissemination of the model in the US. In Wisconsin and Rhode Island, in particular, the original Madison model is favoured, with teams of 10 or more people, allowing 24-hour coverage (the original team in Madison included 18 people [101], divided between two shifts of 8 hours each). In Michigan, on the other hand, and in programs based on the "Bridge" adaptation, one mostly finds smaller teams (Gary Bond, personal communication, August 1998). Research carried out to date does not clearly indicate which of the two approaches is most effective, although the second is undoubtedly less costly (Gary Bond, personal communication, August 1998). The smaller teams are probably more common. The two important implementation manuals that appeared in 1998 are strongly influenced by the Wisconsin model [2, 101].

however, not entirely settled. Some argue for distributing the responsibility for vocational outcomes among all ACT team members, as has been done for several years in Madison. Others believe that responsibility for vocational outcomes must be assigned to vocational specialists who focus on this domain; these vocational specialists should preferably be included on the ACT team itself, or they may be located in a nearby vocational rehabilitation center [101].

- Two recent studies emphasize the importance of supporting the relationship between clients and their families [70,71].

- Current debates among American experts also bear on the ratio of 1 staff for 10 clients; in the field, some believe that a ratio of up to 1:20 may be acceptable, for clients who are less needy (Gary Bond, personal communication, August 1998).

- Whether it is better to transfer apparently stabilized clients to less intensive services, or whether they should be kept within the team almost indefinitely, is also a subject of debate [92].

- The possibility of incorporating social skills training into the ACT model is just beginning to be explored [83].

- The possibility of incorporating dialectical behavior therapy for clients with borderline personality disorder is also being explored.

- Growing attention is also being given to ethical considerations in community treatment. With the increasing presence of clients acting as staff members on teams, relationships between staff and their clients are evolving [31, 34, 101]. In particular, it is now recommended to start from the client's strengths and to formulate objectives on the basis of the client's preferences, in a collaborative manner [83,101]. Thus, the philosophical premises of the so-called "strengths" model of rehabilitation have now largely been absorbed into those of the ACT model.

Clearly then, the ACT model is not a rigid one, but rather an approach to treatment and follow-up that can be adapted to the environment in which it is implemented. Moreover, experimentation is leading to successive refinements of the model.

2.2 ACT VS. INTENSIVE CASE MANAGEMENT

This report focuses on ACT, to the exclusion of intensive case management (ICM), for several reasons.

First, there is some evidence that higher fidelity to the ACT model, particularly in terms of staffing and organization, is associated with greater reductions in hospital days [74]. Further, a reduction in hospital days is in turn associated with an increase in quality of life, according to a recent literature review [83]. Moreover, recent reviews of the literature that examine both ICM and ACT either do not distinguish between the two in terms of clinical impact or satisfaction, etc. [83], or favor ACT [68,69], especially when it is faithful to the Stein and Test model [96,97]. Only the "strengths" model of case management—which has been evaluated in just two small studies, although with encouraging results [66,79]—deserves to be examined more closely, according to Scott et al. [96] and Marshall et al. [69].

Finally, several clinical and organizational arguments favor the shared caseload approach of ACT [41,100,101]:

- The client interacts with each member of the treatment team; this allows the client to express his or her preferences to more than one team member.

- When the client is going though a crisis, there are many team members whom he or she knows, and who can help.

- A team member with whom the client is familiar is always available.

- Team members contribute their complementary personal and professional abilities, thus increasing the treatment's potential effectiveness.

- Team members can help each other, in terms of emotional support as well as coverage, thus reducing burnout – which at least one quasi-experimental study has confirmed empirically [19,20].[6] This same study also reported greater job satisfaction among ACT team members than ICM case managers.

For all the reasons above, assertive community treatment appears to be a more promising organizational model than intensive case management, for its target clientele of people with severe mental illness. This is the reason why the present study focuses on ACT, rather than on ACT and ICM together.

Finally, recall once again that this report does not deal with the clinical appropriateness or cost-effectiveness of less intensive case management models addressed to less severely ill individuals whose needs are less acute. For a more detailed discussion of such models, in French, the reader is referred to the recent report of the Quebec Mental Health Committee, *Défis de la reconfiguration des services de santé mentale* ("Challenges raised by the reconfiguration of mental health services") [28].

[6] In this regard, Stein and Santos mention the possibility of celebrating, as a team, positive events to which all team members will have contributed – for example, a client finally consenting to take baths [101]!

3. RESULTS OF EVALUATIONS OF PROGRAMS BASED ON THE ACT MODEL

This chapter summarizes the results of ACT program evaluations. Of the programs mentioned in the scientific literature, very few precisely replicate the model outlined in the previous section. In practice it is somewhat difficult for a program to include all the ACT model's features.

3.1 Identification of relevant studies

Based on the reviews of Mueser et al. [83] and Scott and Dixon [96], we were able to identify other literature reviews as well as articles describing experimental or quasi-experimental studies on ACT and its variants, as far back as Fenton et al. [50]. In addition to the systematic reviews that Scott and Dixon identified [12,21,88], the review of the literature that Claude Leclerc conducted for the Quebec Mental Health Committee was used to identify source articles, along with a systematic review carried out for the Cochrane Collaboration [69]. Some of these references belong to the "gray literature" and have, in most cases, been obtained [8]. For the period from 1995 to 1998, we did a computerized search using Medline, InfoPsych and Embase, using various combinations of key words to describe the concepts of mental illness, community treatment and cost-effectiveness. Abstracts of the relevant articles were examined, and relevant articles were obtained.

Any review of experimental or quasi-experimental studies of ACT must start by identifying the studies that specifically describe ACT programs. This is more difficult than it may seem, as the case management programs described in the scientific literature vary with respect to a number of factors. If we were to use only those programs that correspond exactly to the ACT model, as described above, we would be forced to base our evaluation on a rather limited number of studies. Given that, in practice, most functioning programs are adaptations rather than exact replicas of the model, it seemed more relevant to base our evaluation on a more representative sampling of studies.

Three main criteria were used to identify relevant studies:

- The team's caseload must be shared among staff, with at least two staff members and a psychiatrist directly involved in a client's treatment. Thus many studies describing individual case management (provided by an individual, as opposed to a team) were excluded from the analysis. As noted by Mueser et al., a team approach is the primary feature that separates assertive community treatment from intensive case management [83].
- Services must be provided primarily in the community, not in staff offices.
- The study must rely on either a randomized or a pre-post design, or else a quasi-experimental design with an appropriate comparison group.

Furthermore, a few studies were excluded because they described programs *requiring* participation of a family member [50,70].

Three studies relying on a quasi-experimental design and fulfilling the first two criteria were identified. In total, 19 randomized studies and 15 non-randomized studies were examined. The main features of these studies are outlined in Tables 3.1 and 3.2.[7]

[7] Not all the studies described by Mueser, Bond et al. [83] as ACT are listed here. Some of the studies, referred to only in Mueser et al.'s 1998 review (to our knowledge), are unpublished and we were unable to obtain them in time. Others seemed to us to describe ICM rather than ACT programs, based on the published description.

Table 3.1 : Main features of randomized design studies

No.	Study and Location	Population Studied	% Schiz.[a]	Program[b]	Groups (n)[b]	Duration	Outcomes Studied[c]
1	Stein and Test 1980 [102] Madison, WI	Presenting at Emergency Room (ER)	50	Original ACT	ACT (65) OPS (65)	1 yr	H, S, A, J/A, FB, Q, Saf, HS, E, C
2	Mulder 1982 [85]; Mowbray et al., 1997 [82] Kent County, MI	Previous hospitalizations	79	ACT replica	ACT (59) OPS (62)	30 mos 66 mos	H, A, E, Q; H
3	Hoult et al., 1983 [56] Sydney, Australia	Presenting at ER	50	ACT replica	ACT (60) OPS (60)	1 yr	H, S, A, FB, Sa_C, Saf, E, C
4	Bond et al., 1988 [13] Indiana (3 sites)	Previous hospitalizations	75	"Bridge"-type adaptation	ACT (84) CM (83)	6 mos	H, J/A, MC, Q, C
5	Bond et al., 1990 [15] Chicago, IL	Previous hospitalizations	67	"Bridge"-type adaptation	ACT (45) DIC (43)	1 yr	H, S, A, HS, J/A, Q, E, Saf, C
6	Bush et al., 1990 [22] Atlanta, GA	Previous hospitalizations	86	"Bridge"-type adaptation	ACT (14) OPS (14)	1 yr	H, MC
7	Test et al., 1991 [106]; Allness 1997 [2] Madison, WI	Schizophrenics	100	High-fidelity ACT	ACT (75) OPS (47)	7 yrs	H, J/A, E, A, Q, HS
8	Morse et al., 1992 [80] St. Louis, MO	No stable housing	30	"Bridge"-type adaptation	ACT (52), OPS (64), DIC (62)	1 yr	S, A, HS, SA, Sa_C
9	Marks et al., 1994 [67] London, England	Presenting at ER	49	ACT replica	ACT (92) OPS (97)	20 mos	H, S, A, Sa_C, Saf, C
10	Rosenheck et al., 1995 [91]; USA (10 Veteran Administration sites)	Previous hospitalizations	50	More or less faithful adaptations	ACT (454) OPS (419)	2 yrs	H, S, A, Sa_C, Saf, C
11	Åberg-Wistedt et al., 1995 [1]; Stockholm, Sweden	Recent admissions or outpatients	88	Atypical adaptation[d]	ACT (20) OPS (20)	2 yrs	H, A, Q, Saf
12	Solomon and Draine, 1995 [98]; Philadelphia, PA	No stable housing; prison leavers	84	ACT replica	ACT (60); JCM (60); OPS (80)	1 yr	H, S, A, HS, J/A, Q
13	Quinlivan et al., 1995 [90] San Diego, CA	Previous hospitalizations	68	"Bridge"-type adaptation	ACT (30); CM (30); No CM (30)	2 yrs	H, C
14	Chandler et al., 1996, 1997 [24,25]; California (2 sites)	Functional limitations and on public assistance	61	ACT with capitation funding	ACT (217) OPS (222)	1 yr	H, S, A, HS, J/A, MC, Q, E, Sa_C, C
15	LaFave et al., 1996 [62]; Brockville, Ontario	High service users	57	ACT replica	ACT (24) OPS (41)	25 mos	H, S, HS, Q, Sac
16	Morse et al., 1997 [81] St. Louis, MO	No stable housing	66	"Bridge"-type adaptation	ACT, ACT +P, OPS (total 165)	18 mos	S, HS, SA, Sa_C

Table 3.1 (Cont'd) : Main features of randomized design studies

No.	Study and Location	Population Studied	% Schiz.[a]	Program[b]	Groups (n)[b]	Duration	Outcomes Studied[c]
17	Lehman et al., 1997 [63] Baltimore, MD	Prev. Hosp.; no stable housing	58	ACT with clients on team and staff for families	ACT (77) OPS (75)	1 yr	H, S, A, HS, J/A, SA, Q
18	Drake HS 1998 [41]; Clark et al., 1998 [113] New Hampshire (7 sites)	Substance abusers	76	ACT with integrated dual diagnosis treatment	ACT (109) CM (114)	3 yrs	H, S, HS, SA, Q
19	Essock and Kontos, 1995 [46]; Essock et al., 1998 [47]; CT (3 sites)	Previous hospitalizations	67	High fidelity	ACT (131) CM (131)	18 mos	H, S, HS, Q, FB, C

Notes for Table 3.1:

a Percentage with schizophrenia or schizoaffective disorders

b
- ACT: *Assertive Community Treatment*
- ACT+P: ACT with team comprising paraprofessionnel community workers
- CM: *Case Management* (less intensive community treatment, with 25 clients or more per staff worker)
- JCM *Judiciairy Case Management* (Community treatment, by workers prepared to deal with clients who have been in jail)
- DIC: *Drop-In Center*, a community resource for leisure and social activities
- OPS: *Standard Case Management*, by out-patient clinic with no community treatment

c
- A: Adjustment, social and otherwise
- C: Costs
- E: Employment
- FB: Family burden
- H: Hospitalizations
- J/A: Jail/arrests
- Q: Quality of life (objective or subjective)
- MC: Medication compliance
- S: Symptoms
- SA: Substance abuse
- HS: Housing stability
- Sa_c: Client satisfaction with services
- Sa_f: Family member satisfaction with services

d Program involving a hospital team providing treatment evenings and weekends, and an out-patient clinic team with a psychiatrist that provides treatment during regular office hours. Once every two weeks the clients meet with the entire team; a designated team member spends four hours/week with the client.

Table 3.2 : Main features of non-randomized design studies

No.	Study and Location	Population Studied	% Schiz.[a]	Program[b]	Design[c]	Groups (n)[b]	Duration	Outcomes Studied[d]
20	Witheridge et al., 1982 [112]; Bond 1984 [7]; Chicago, IL	Mostly previous hospitalizations	76	"Bridge"-type adaptation	PP	ACT (50)	1 yr	H, C
21	Bond et al., 1985 [16] Chicago, IL	Previous hospitalizations	NS	"Bridge"-type adaptation	PP	ACT (30)	1 yr	H
22	Borland et al., 1989 [17] Spokane, WA	Previous hospitalizations	99	ACT adaptation, fairly coercive in nature	PP	ACT (72)	5 yrs	H, SA, MC
23	Wright et al., 1989 [113]; Seattle, WA	Previous hospitalizations	75	Low fidelity	PP	ACT (196)	4 yrs	H, J/A
24	Bond et al., 1991 [11] Indiana (3 sites)	Previous hospitalizations; young substance abusers	70	"Bridge"-type adaptation	QE	ACT (31); EG (23); OPS (43)	18 mos	H, HS, J/A, SA, MC, Q, E, Sa_C
25	Bond et al., 1991 [14] Philadephia, PA	Previous hospitalizations	64	"Bridge"-type adaptation	QE	ACT (30) CM (10)	2 yrs	H
26	Santos et al., 1993 [94] South Carolina (rural)	Previous hospitalizations or treatment-resistant	74	Rural adaptation of ACT with psy. + 2 nurses	PP	ACT (23)	4-26 mos	H, C
27	Santos et al., 1993 [95]; Charleston, SC	Previous hospitalizations	100	ACT replica	PP	ACT (52)	1 yr	H, HS, C
28	Drake et al., 1996 [42]; New Hampshire	Substance abusers	100	ACT with integrated dual diagnosis treatment	PP	ACT + IDDT (18)	4 yrs	SA
29	Dincin et al., 1993 [37]; Chicago, IL	Previous hospitalizations	NS	"Bridge"-type adaptation	PP	ACT(66)	3 yrs	H
30	Dharwadkar, 1994 [33]; Dandenong, Australia	Previous hospitalizations	NS	ACT adaptation (no 24h/7d)	PP	ACT (50)	1 yr	H
31	Hambridge et Rosen, 1994 [54]; Sydney, Australia	Previous hospitalizations	83	ACT adaptation with fairly individual follow-up	PP	ACT (50)	1 yr	H, S, A
32	Sands and Cnaan, 1994 [93]; Philadelphia, PA	Previous hospitalizations	90	ACT replica; 100% of ACT in supervised housing, 50% for ICM	CA	ACT (30) ICM (30)	1-12 mos	H, A, HS, SA, MC, E
33	McGrew et al., 1995 [72]; Indiana (6 sites)	Previous hospitalizations	65	Rural adaptations of ACT	PP	ACT (212)	18 mos	H, A, HS, J/A, MC, Q, E
34	Meisler et al., 1997 [76]; Wilmington, DE	Homeless substance abusers	NS	ACT with integrated dual diagnosis treatment	PP	ACT + IDDT (114)	12-48 mos	H, HS, J/A, SA, E

Notes:

[a] See note a of Table 3.1. NS: not specified.

[b] See note b of Table 3.1. EG: Educational Groups; ICM: *Intensive Case Management*; IDDT: *Integrated Dual Diagnosis Treatment*.

[c] PP: pre-post (before/after comparison); QE: quasi-experimental (comparison group without random assignment); CA: comparison of cases apparently based on predetermined criteria.

[d] See note c of Table 3.1.

3.2 Impact of ACT on various factors pertaining to the well-being of clients and their families, and to their level of satisfaction with services

Table 3.3 summarizes the results of the identified studies, in terms of symptoms, level of functioning, housing stability, quality of life, medication compliance, vocational functioning, substance abuse, jail/arrests, client and family member satisfaction with services, and family burden. (The coding method follows the same procedure as that used by Mueser, Bond et al. [83].[8]) Measured effects are relative to the control or comparison group, described in Tables 3.1 and 3.2.[9]

Programs based on the ACT model had either a positive or neutral effect on clients. Only one study, using a pre-post design, found any negative effect resulting from an ACT program: increased time spent in jail/arrests [72]. The study's authors attribute this increase to the introduction of more complete reporting of jail/arrests once the clients were registered in the program.

It should also be noted that the uniform presentation of study results in Table 3.3 belies the wide variety of measurement instruments used. For example, quality of life can be measured in subjective or objective terms. Subjective quality of life can be measured according to different methods, most of them based on the clients' perceptions, and some of which include the team members' viewpoint. Objective quality of life is assessed based on various factors such as the client's physical environment, his or her social network, etc. Some studies measure only subjective quality of life, others only objective quality of life, etc. The almost total absence of negative effects is all the more striking considering the wide variety of measurement methods.

Many of the numerous non-significant findings (indicated in Table 3.3 by an equals sign) may be attributable to the low statistical power of the studies, which in turn arises from their limited sample size. For example, involvement with the justice system being relatively rare, a study with limited sample size is unlikely to detect a statistically significant difference in the jail/arrests category. The almost total absence of *negative* measured effects suggests that programs based on the ACT model have, on the whole, beneficial effects on the quality of care for clients. At the same time, it seems likely that the characteristics of the various programs affect their effectiveness on various dimensions. As indicated below, some sort of relationship appears to exist between fidelity to the ACT percentage decrease in days hospitalized.[10]

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[8] This coding method relied on the combined judgments of three of the article's authors, and is therefore likely to be fairly reliable. The author of the present report (EL) coded three studies not included in the Mueser et al. [83] review (Lafave, Souza et al. [62]; Drake McHugo et al. [41]; and Essock, Frisman et al. [47]). We also removed two question marks in the coding of Chandler et al. [25], which seemed fairly clearly resolvable from the text. Finally, we distinguished between satisfaction of family members with services, and family burden.

[9] In the few cases where there is more than one control or comparison group, the difference is coded in the same way, regardless of the group with which the comparison is made.

[10] It may seem natural to summarize these results using formal meta-analytic methods. We concluded that such methods were of limited applicability in this context: the various programs studied are quite different from each other, as are the groups of patients treated and the organizational contexts. Therefore, the real effects of the programs are likely to vary from one program to the next. Moreover, the results are uniformly either not statistically significant, or favorable to ACT. Therefore, meta-analytic methods are not required to conclude that the model is efficacious in terms of either reduction in hospital days or quality of care. These arguments notwithstanding, Marshall et al. have used meta-analytic methods to arrive at conclusions similar to those given here [68,69]

Table 3.3 : Effects of ACT on symptoms (S), social adjustment (A), housing stability (HS), quality of life (Q), medication compliance (MC), employment (E), substance abuse (SA), jail/arrests (J/A), client satisfaction with services (Sa_C), family member satisfaction with services (Saf), and family burden (FB)

No.	Study	S	A	HS	Q	MC	E	SA	J/A	Sa_C	Saf	FB
1	Stein and Test 1980 [102]	+	+=	+	+	+	+		=			=
2	Mulder 1982 [85]; Mowbray 1996 [82]		=		+		=					
3	Hoult et al., 1983 [56]	+-	=				=		=	+	+	
4	Bond et al., 1988 [13]				=	=			=			
5	Bond et al., 1990 [15]	+	=	+=	=		=		+	+		
6	Bush et al., 1990 [22]					+						
7	Test 1991 [106]; Allness 1997 [2]	+	=		+		+		+			
8	Morse et al., 1992 [80]	=	=	+			+	=				
9	Marks et al., 1994 [67]	+=	+=							+	+	
11	Åberg-Wistedt et al., 1995 [1]		=		=						+	=
12	Solomon and Draine 1995 [98]	=	=	=	=			=	=			
14	Chandler et al., 1996 [24]	=	=	=	+=		+	=	=			+
15	LaFave et al., 1996 [62]	=		+	+					+=		
16	Morse et al., 1997 [81]	+		+=				=		+		
17	Lehman et al., 1997 [63]	+=	=	+	+=			=	+			
18	Drake et al., 1998 [41]	=		=	+=			+=				
19	Essock et al., 1998 [47]	=			+		=					+=
22	Borland et al., 1989 [17]					+		+				
23	Wright et al., 1989 [113]								+			
24	Bond et al., 1991 [11]			=	=	=	=	=	=		=	
26	Santos et al., 1993 [94]			+								
27	Santos et al., 1993 [95]			+								
28	Drake et al., 1993 [42]							+				
30	Dharwadkar 1994 [33]	+										
31	Hambridge and Rosen 1994 [54]	+	+									
32	Sands and Cnaan 1994 [93]		=	=		+	=	=				
33	McGrew et al., 1995 [72]		+	=	+	=	=		-			
34	Meisler et al., 1997 [76]			+				+				

Note: "+" indicates a positive (i.e., desirable) effect of ACT. "+=" indicates a relatively insignificant positive effect. "+-" indicates that the effect depends on how it was evaluated. "-=" indicates a relatively insignificant negative effect. Statistically non-significant differences are represented by an equals sign ("=").

In their recent review of the literature, Mueser et al. [82] make a number of additional points that bear repeating. They argue that the reduced levels of symptomatology could be understood in light of the vulnerability to stress model [87]. This model implies that stress reduction, symptom monitoring, medication compliance, and control of substance abuse—all fostered by ACT—should reduce levels of symptomatology [82].

Mueser et al. also conclude that ACT programs have had virtually no effect on social adjustment. This they attribute to the fact that implementations of the ACT model to date have failed to include social skills training [83]. Such training, preferably carried out in the client's normal living environment, has been shown in some studies to produce positive results [35,84].[11]

As Table 3.3 also indicates, few studies so far have examined the effect of ACT on family burden and satisfaction of relatives with services. Overall, available results suggest that ACT does decrease family burden and increase satisfaction of relatives. (Recent studies indicate that even better results in terms of family member satisfaction can be obtained by associating the ACT program with multifamily groups [70]).[12]

Thus we may conclude that ACT is more beneficial for clients—both from their own point of view, and that of ACT staff—and their families, than either standard aftercare or individual case management. The question, then, is how to optimize ACT so it can address varied client needs more effectively [83,96].

3.3 Effects of ACT on Hospitalizations

The most consistent effect of ACT is the reduction of time spent in hospital [12, 83, 96, 97]. Using the identified studies, we attempted to estimate the average percentage reduction in hospital days. We began by recording or (where necessary) calculating the percentage of reduction in hospital days generated by an ACT program.[13] We excluded three sites from multisite studies which, according to study authors, had not implemented the model: site B (Fort Wayne) of the Bond et al. 1988 study [13] and sites GMS-2 and GMS-5 of the Rosenheck et al. study [91]. There remained 33 sites, from 25 studies [13 - 17, 22, 33, 37, 47, 54, 55, 62, 63, 67, 72, 82, 90, 91, 93 - 95, 102, 106, 111, 112]. The results are shown in Table 3.4.

Given the greater internal validity of randomized designs, it seems reasonable to conclude that implementing ACT programs would reduce the number of hospital days by approximately 50%, with 80% and 20% representing high and low bounds respectively (plus or minus one standard deviation from the mean). These figures will be used in subsequent simulations (section 7).

Reductions in hospital days can result from reductions in either admissions or length of stay (or both). Synthesizing the observations of various authors suggests five ways in which ACT reduces admissions [15, 36, 82]:

- The team can anticipate crises and provide pro-active treatment; for example, by helping clients to manage their money more effectively.

- Team members can resolve many minor crises themselves, sometimes with the assistance of a crisis intervention centre.

[11] Dr. Robert Liberman at the University of California Los Angeles is directing a study on this very question (Gary Bond, personal communication, August 1998).

[12] These results, combined with the benefits for the clients themselves, have led the National Alliance for the Mentally Ill (NAMI), the influential American association of relatives and friends of the mentally ill, to take significant steps to promote ACT. NAMI has adopted ACT as part of its strategy to fight discrimination against mental illness (Campaign to End Discrimination) [40,51]. It has also created a subsidiary, PACT Inc., to help disseminate the ACT model, partly through the development of national standards for ACT programs and partly through certification of programs [75].

[13] In cases where the study was randomized or quasi-experimental, the percentage represented the difference between the two groups. When there were more than two groups, ACT was compared to the more standard treatment method.

Table 3.4 : Average reduction in hospital days for different groups of sites

	Number of Sites	Average % Reduction	Standard Deviation	Maximum Reduction Among Sites in Group	Minimum Reduction Among Sites in Group
Sites in randomized studies	21	51.9%	26.2	84.8 %	10.4 %
Sites in non-randomized studies	12	68.7%	11.2	94.0 %	45.3 %
Total sites	33	58.0 %	21.7	94.0 %	10.4 %

- The team can improve medication compliance.
- The team gives the clients confidence that, if they are really in need, they can get help from people they trust, at any time of day.
- By improving their life skills and making their environment more welcoming, the team reduces clients' stress levels.

ACT can also shorten hospital stays insofar as the team can influence discharge plans. The literature indicates that reductions of more than 50% in hospital days can be achieved even when the ACT team has no control over the length of stay [12].

A published statistical regression analysis involving a subset of the studies appearing in Table 3.4 shows that the percentage decrease in hospital days increases with fidelity to the ACT model, particularly fidelity in terms of staffing and organization (services provided were not a statistically significant predictor) [72]. Two studies not yet published also arrive at the conclusion that higher fidelity yields better outcomes (Gary Bond, personal communication, August 1998). It seems obvious that the less differentiated a program is from standard aftercare, the less likely it is to achieve the positive effects noted here. More research is needed to isolate those elements of the ACT program leading to the greatest reductions in hospital days.

3.4 Effects of ACT on Consumption of Resources Other than Hospitalizations and on Costs

Table 3.5 summarizes the effects of ACT-based programs on client housing. There is a clear tendency for ACT clients to achieve more autonomous housing. This is consistent with team members' support of the taking of medications, contacts with landlords and neighbors, and help with daily living tasks. The reduction in use of supervised housing, which this trend toward more independent housing implies, also contributes to a reduction in costs.

ACT can also help some clients with no previous stable living arrangement to live in supervised housing. Overall, studies suggest that this type of transition is less common than the transition from supervised to independent housing. It is not possible to say, however, what the net economic impact is likely to be.

Table 3.5 : Effects of ACT on clients' housing situation

No.	Study	Effects
1	Stein and Test, 1980 [102] Test and Stein, 1980 [107] Weisbrod et al., 1980 [117]	Higher proportion of ACT clients in independent housing ($p<0.05$) and lower proportion in supervised housing facilities (not significant).
2	Mulder, 1982 [85]; Mowbray et al., 1997 [82]	Reduction from 15% to 6% for ACT clients in supervised housing. At 30 months, 6% of ACT clients in supervised housing compared to 34% in the comparison group ($p<0.001$); 36% living alone compared to 26% in the comparison group (difference not tested).
5	Bond et al., 1990 [15]	Slightly higher proportion in independent housing ($p<0.05$) and in supervised housing.
7	Test et al., 1991 [106]	ACT clients spend more time in independent housing ($p<0.05$), less in supervised housing ($p<0.05$), less with families, less being homeless ($p<0.05$).
8	Morse et al., 1992 [80]	With initially homeless clientele, greater reduction in days homeless at 12 months.
14	Chandler et al., 1997 [24]	Supervised housing expenses higher for ACT at one site, but not at the other; greater housing autonomy at both ACT sites.
15	LaFave et al., 1996 [62]	At 12 months, 50% of ACT clients in independent housing and 50% in supervised housing; 45% of control group in hospital, 20% in independent housing, 35% in supervised housing ($p<0.001$).
17	Lehman et al., 1997 [63]	With primarily homeless clientele, more community housing (210 days per year versus 160 for comparison group subjects ($p<0.01$)), fewer days homeless (10 days vs. 24), slightly fewer in homeless shelters (83 days versus 89).
22	Borland et al., 1989 [17]	Increase in use of supervised housing from 37.4 days per person per year to 106.9 over the subsequent five years ($p<0.001$). 24-hour coverage made it possible for many to return to residences from which they had been evicted. Rather coercive implementation of ACT.
27	Santos et al., 1993 [95]	The number of patients living alone increased 3.4 fold, from 11 to 37 (out of 51), and only one patient moved to a residence with a higher level of supervision than previously received (no statistical test reported).
33	McGrew et al., 1995 [72]	Non-significant increase (46% to 50%) in proportion of clients in the ACT group living in their own apartment.

Table 3.6 shows ACT's effects on the consumption of resources other than hospitalizations and housing. In most cases, ACT appears to be associated with greater or similar use of outpatient services (other than the ACT team itself). The exceptions are the studies of Stein and Test [102], Marks [67], and Sands and Cnaan [93], which describe relatively high-fidelity programs. This is consistent with the theoretical argument according to which a team that includes a psychiatrist, mostly meets clients in their own environment, and does not operate out of an outpatient clinic, normally has little or no recourse to an outpatient clinic. To the extent that, on the contrary, a team refers clients to an outpatient clinic, it is easy to imagine how clients who previously received few services could receive more.

Table 3.6 also suggests a minimal effect on the use of emergency rooms. Scott and Dixon suggest, however, that use of a 24-hour crisis inter-

Table 3.6 : Effects of ACT on use of resources other than hospitalization and housing

No.	Study	ER	OC	DP	CS	GP	ST	WP	EI	CR
1	Stein and Test 1980 [102]; Test and Stein 1980 [107]; Weisbrod, Stein and Test [117]	-=	-					-	+	- =
2	Mulder 1982 [85]; Mowbray et al., 1997 [82]						=			
3	Hoult et al., 1983 [56]							=		
4	Bond et al., 1988 [13]*	+ =	- =	- =			+ =	+ =	- =	+
5	Bond et al., 1990 [15]		- =						- =	
6	Bush et al., 1990 [22]	=								
8	Morse et al., 1992 [80]		+				+			
9	Marks et al., 1994 [67]		-	-		-=				
10	Rosenheck et al., 1995 [91]		+=							
11	Åberg-Wistedt et al., 1995 [1]	- =								
13	Quinlivan et al., 1995 [90]	-=	+	-=	+=					
14	Chandler et al., 1997 [24]		+ -	- =			- =	=	+ -	
17	Lehman et al., 1997 [63]	-	+				+			
19	Essock et al., 1998 [47]								+ =	
22	Borland et al., 1989 [17]		+=					+=		
25	Bond et al., 1991 [14]	-								
32	Sands and Cnaan 1994 [93]		-	+		+		+ =		
33	McGrew et al., 1995 [72]							+		

Notes: A plus sign indicates a statistically significant increase in cost or use of a service, or an increase in revenue, by ACT clients. If the plus or minus sign has an equals sign next to it, either the difference is not statistically significant, or else no statistical test has been reported. A plus and a minus sign together indicate contrary effects (e.g., different depending on the type of outpatient clinic service). An equals sign indicates that the direction of the difference is not specified.

ER: Emergency room
OC: Outpatient clinics
DP: Day programs
CS: Crisis-intervention services
GP: General practitioners
ST: Substance abuse treatment
WP: Proportion of clients receiving welfare payments
EI: Employment income
CR: Use of community-based resources

*: Site A only

vention service, or renting rooms for clients in crisis, can help reduce the use of emergency rooms, as well as hospitalization [96]. Knapp et al. [60] explain the less frequent recourse to family physicians observed by Marks et al. [67] by the increased use of ACT nursing services. With regards to employment, some recent studies suggest that the client's vocational functioning can improve if more active support is provided in this area [42,53]. Family members can also be successfully implicated in such initiatives [70].

Overall, it seems most likely, considering Tables 3.4 to 3.6 together, that the widely observed reduction in hospital days will be more than sufficient to compensate, in terms of cost, any increase in use of other services, including the cost of the ACT program.

Table 3.7 : Effects of ACT on annual costs per client (in $US unless otherwise specified)

No.	Study	Costs Measured[a]	Comments
1	Stein and Test, 1980 [102]; Weisbrod et al., 1980 [117]	ACT: $5,729 Control group: $6,128	Includes all treatment as well as other costs, and takes account of higher employment revenue for ACT (ACT: $2,364 vs. $1,136).
3	Hoult et al., 1983, 1984, 1986 [55, 56, 57]	ACT: $4,489 AUS Control: $5,669 AUS	Direct (medical and case management services) and indirect costs (jail/arrests, etc.), public and private.
4	Bond et al., 1988 [13]	ACT 1: $8,519 (6 mos) Control 1: $13,747 (6 mos) Site 2: Higher cost for ACT, amounts not shown Site 3: No difference, amounts not shown	Includes broad range of direct costs, legal costs, and welfare. The model was in fact not implemented at site 2.
5	Bond et al., 1990 [15]	Net savings from ACT: $1,547	Only takes into account hospitalization (lower cost than for control group) and ACT service costs.
9	Marks et al., 1994 [67] Knapp et al., 1994 [60]	ACT: £196/wk Control: £358/wk ($p<0.001$)	Combines treatment and housing costs, for the first 20 months. (Difference in treatment costs only is also statistically significant.)
10	Rosenheck et al., 1995 [91]	ACT 1: $40,243 | $p<0.01$ Control 1: $56,891 | ACT 2: $23,673 | n.s. Control 2: $20,537 |	Overall, only 20% reduction in direct costs, but increase at certain ACT 2 sites (general as opposed to psychiatric hospital sites) where program poorly implemented.
13	Quinlivan et al., 1995 [90]	ACT: $9,471 ICM: $13,043 OC: $21,047 ($p=0.11$, combined test)	Costs of hospitalization and outpatient services. Savings due to less time in hospital more than equalled costs of ACT treatment ($6,000).
14	Chandler et al., 1997 [24]	ACT site 1: $29,257 Control site 1: $19,308 ACT site 2: $30,766 Control site 2: $19,053	Costs of treatment and costs to government. Similar difference if only mental health costs are considered. Capitation budgets given to ACT sites were greater than earlier treatment costs; no such increase granted to control sites.
19	Essock et al., 1998 [47]	ACT: $33,473 ICM: $35,656 (difference not significant)	Societal perspective. Difference still in ACT's favour, whether seen from a government or Department of Mental Health viewpoint. Analyses by sub-group show a statistically significant difference for ACT clients who were hospitalized at time of study entry; the difference goes the other way for those who were not, but is not significant.

The results shown in Table 3.7 support such a conclusion. In 10 out of 12 studies, ACT is associated with lower costs overall (counting the Stein and Test study as showing lower costs for ACT, which it does if the greater economic productivity of ACT clients is taken into account). In one of the Bond et al. studies [13], ACT costs are higher at one site, where the ACT model was in fact not implemented; the same is observed in the Rosenheck et al. study [91], where the model

Table 3.7 (Cont'd) : Effects of ACT on annual costs per client (in SUS unless otherwise specified)

No.	Study	Costs Measured[a]	Comments
20	Witheridge et al., 1982 [112]; Bond, 1984 [7]	Before: $19,243 After: $13,501	Includes hospitalization and ACT service costs only.
22	Borland et al., 1989 [17]	Before: $12,249 After: $13,949	Greater costs of supervised housing, combined with ACT service costs, exceed savings from hospitalizations.
26	Santos et al., 1993 [94]	Before: $12,450 After: $6,500	Costs of hospitalization, outpatient clinic, and ACT services only. Few details given on calculation methods.
27	Santos et al., 1993 [95]	Before: $18,800 After: $11,300	Same comments as for Santos et al., 1993 [94]
32	Sands and Cnaan, 1994 [93]	Net savings with ACT: $15,178	Direct and support staff costs only.

- Note: **Costs indicated are from slightly before the year of publication. Differences were not tested for statistical significance, unless otherwise specified.**

was not implemented at all at two of the sites in the end.

The studies by Chandler et al. [24,25] and Borland et al. [17] are the only ones where significantly higher costs were seen in association with ACT. The Chandler et al. study [24] is atypical, however, in that the programs evaluated were financed by a capitation budget, set at a higher level than the clients' previous treatment costs, while the comparison sites maintained their usual budget levels. As for Borland et al.'s study [17], the higher post-treatment cost is attributable to a large increase in the use of supervised housing.

Note finally that the variance in costs is always very large, more so than for most other outcome measures: thus it is difficult to achieve statistically significant differences in costs. Not surprisingly, then, most of the differences are not statistically significant; in some cases no statistical tests were reported. Nonetheless the results suggest, overall, that a significant reduction in costs is likely to occur if the model is implemented correctly.

3.5 CONCLUSIONS

The literature indicates that ACT tends to have a positive impact on psychiatric symptoms and on quality of life, as perceived by both clients and their case managers. The effect on social adjustment is considered at present to be negligible. ACT tends to increase client satisfaction with respect to services. The limited results available to date suggest that ACT also reduces family burden, while increasing family member satisfaction with services. The active lobbying from the National Alliance for the Mentally Ill (NAMI) to disseminate the ACT model in the USA should reassure associations of relatives and friends of the mentally ill in Quebec. In fact, these associations would do well to study NAMI's position and strategy, and consider whether they too might join together to promote dissemination of the ACT model.

Remarkably, almost without exception, the identified studies do not reveal any significant negative impact of ACT on any of the dimensions examined. *We may therefore conclude that ACT almost certainly has a positive effect on the quality of treatment, compared with either standard*

care involving appointments at an outpatient clinic, or a less assertive type of case management.

In terms of costs, it appears that the substantial reduction in hospital days more than compensates for the operating costs of the ACT team itself. Effects on other direct costs are relatively minor, and vary depending on the study. Results to date do not indicate significant gains in client economic productivity.[14] The impact on justice-related costs is difficult to evaluate, partly because costly judicial and prison episodes are relatively infrequent in this population. However, no study has revealed any real and significant increase in criminal activity associated with ACT. It seems likely that an ACT program will reduce direct costs, even within a year of implementation. It is less clear what will happen to social costs, which would include use of community resources, family burden, etc., given the small number of studies that measure costs so comprehensively.

[14] As discussed below (section 6), however, recent results suggest that significant gains in this area can be achieved by integrating supported employment approaches with ACT

4. TARGET CLIENTELE

4.1 Criteria for admission into ACT

The literature is fairly unanimous in suggesting that, at a minimum, ACT services should be targeted to persons with the following characteristics:

- adult age (18 to 65 years old);
- psychiatric illness associated with psychotic episodes; in particular, schizophrenia, schizo-affective disorder, and bipolar disorder;
- inadequate response to less intensive services (e.g., does not show up for appointments, does not take medication);
- significant functional deficits (in terms of employment, activities of daily living, development of a network of social support, or behavior in public or with others);
- a pattern of prolonged or repeated rehospitalizations.

The presence of one or more additional areas of difficulty (e.g., substance abuse, legal difficulties) increases a person's need for ACT services.

ACT is not intended for people with mental handicaps.

Whether people with borderline personality disorder should be included is as yet unclear. Most ACT programs do include some, since they are often among the most challenging clients. Very few studies have tried to perform a diagnosis-based comparison of ACT effects; we identified only one, which found that ACT is relatively ineffective for this particular group [116]. As indicated earlier, however, the augmentation of ACT with dialectical behavior therapy (an approach thought to be especially suitable for persons with borderline personality disorders) could alter this situation.[15] This issue thus remains unresolved.

Another gray area, mentioned in section 4, concerns the number of previous hospital days clients must have before they can be registered in an ACT program. On the one hand, the greater the number of previous hospital days, the greater the potential savings following admission. On the other hand, it is obviously preferable to begin treating a person whose condition is deteriorating rapidly (for example, a young person with schizophrenia) as soon as possible. Some clients may have adopted a disorderly or excessively reclusive lifestyle which pleases neither them nor their circle of family and friends, without necessarily having spent much time in hospital. Finally, the client's service area may also affect the number of previous hospital days: regardless of the degree of need, this number will be greater in an area with more psychiatric hospital beds.

This question can also be addressed by focusing on clients' service needs. In Dane County, WI, admission decisions have for many years been guided by an evaluation instrument spanning seven areas: (a) likelihood of showing up for appointments; (b) medication compliance; (c) need for structured daily activities; (d) insight to recognize a deterioration in symptoms and ability to then seek help; (e) frequency of crises; (f) need for professional psychological support; and (g) amount of support services required [48, 101].[16]

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[15] This was the subject of one of the presentations at the 1998 annual ACT conference, in Detroit, MI.

[16] According to Linda Keys, who directs the Dane County ACT teams, the admission process also involves a committee of stakeholders, including team members, clients, family members, etc. With experience, she says, you "know

Finally, certain clients with greater functional abilities may prefer programs such as clubhouses,[17] or a less intensive type of case management. The availability of these types of services will also affect the boundary between those for whom ACT services are optimal, and those for whom other services would be preferable.

4.2 NUMBER OF PEOPLE REQUIRING ACT SERVICES

The previous section implies that many chronic users of the mental health system do not require ACT, especially in areas where other types of services are available (community organizations offering less intensive types of case management, etc.). It is natural to wonder—in spite of the number of factors just indicated that influence the number of people for whom ACT is appropriate—for what approximate percentage of the population this type of service is required.

Dr. Darrel Regier, under the auspices of the National Institute of Mental Health in the United States, recently estimated the proportion of the population requiring ACT services. Based on the current prevalence of this type of program in New Hampshire, he set the proportion at 0.65 out of 1,000 (Darrel Regier, personal communication, March 1998).

We also contacted representatives in several American states as well as the Quebec regions of Hull and Shawinigan to find out not only the current number of people receiving ACT, but also how many, in their estimation, should ideally be receiving it.

The results are shown in Table 4.1. In Michigan, the approach currently favoured is to provide the clients in each area with as many options as possible, such as clubhouses, drop-in centres, and less intensive types of case management in addition to ACT. The ACT state coordinator believes that, given these alternatives, certain areas may now have too many ACT teams, while others still do not have enough – so that overall, the number of clients currently receiving ACT is probably close to what it should be (Catherine Ferguson, personal communication, 1998).

Table 4.1 shows that Dane County stands out from the other jurisdictions by its high proportion of people receiving ACT. The ACT director for Dane County, Ms. Linda Keys, told us that this high proportion is largely due to the fact that ACT services have been available in this area for about 20 years, and that stabilized clients generally continue to be treated by the same team. Thus the current staff:client ratio in that area is 1:13 (Linda Keys, personal communication, 1998).

If we assume that ACT programs transfer their stabilized clients to less intensive case management services, the last column in Table 4.1 suggests that the proportion of people requiring ACT is somewhere between 0.7 and 1 person per 1,000. This range of ratios is very similar to that obtained by a recent study carried out in Ontario, on the basis of data from two US counties as well as the state of South Carolina as a whole: 0.8 to 1.1 persons per 1,000 [27].[18] If we assume

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who should receive ACT services." (Linda Keys, personal communication, 1998).

[17] A clubhouse is a type of rehabilitation program, focused on work and empowerment. Consumers come of their own accord to the clubhouse site, where they can participate in a number of recreational, work, and rehabilitation activities. Consumers play a large role in the operation of the clubhouse. The staff:client ratio is around 1:20. Becoming a member of a clubhouse obliges the consumer to respect certain rules of behavior, but does not involve any follow-up services [5, 10, 23, 101]. The clubhouse model is extensively used in Michigan and in Dane County as a treatment modality for consumers whose needs are somewhat less than those of ACT clients (Catherine Ferguson, personal communication, 1998) [101].

[18] This estimate is derived from Table 3 of their report, where the ratio is expressed in terms of the proportion of the adult population only and not the entire population, as

Target Clientele

in Table 4.1 of this report. Their report [27] estimates the adult population to represent 78% of the total population.

Table 4.1 : Number of people currently, and ideally, being treated by ACT teams in various areas

	Approximate Population (P) in 1997	Current Number of People Treated by ACT Teams (CN)	CN/P Ratio (per 1,000 people)	Estimated Number of People Treated if Resources Available (EN)	EN/P Ratio (per 1,000 people)
Michigan	9,800,000	6,700	0.7	6,700	0.7
Texas	19,400,000	5,200	0.3	7,500 – 15,000	0.4 – 0.8
Dane County, WI	400,000	470	1.2	550-600	1.4 – 1.5
Rhode Island	1,000,000	900	0.9	1,050	1.05
Hull	100,000	40	0.4	100	1
Shawinigan	83,000	39	0.5	60-80	0.7 – 1

Sources: Program directors for Michigan, Texas, Rhode Island, Dane County (WI), Hull and Shawinigan.

that approximately 2% of the general population have severe and persistent mental illness, this means that about 3.5-5% of this group would be treated by ACT teams – or 0.07 to 0.1 persons out of 2 with severe and persistent mental illeness. If instead we consider only 1% of the population as having severe and persistent mental illness, 7-10% of these people would receive ACT. In Quebec as a whole, we would then find approximately 4,900 to 7,000 people being served by ACT teams, or between 15 and 22% of the approximately 32,000 people receiving psychiatric services in Quebec [28].

It is important to note, however, that the prevalence of severe mental disorders varies greatly from one area to the next, particularly in relation to various demographic and socioeconomic factors. Dr. Alain Lesage and colleagues have examined the relation between psychiatric hospitalization rates and sociodemographic characteristics such as income. Their analysis leads them to conclude that the levels of need for seven geographic sectors served by *Hôpital Louis-Hippolyte Lafontaine*, which have quite different socioeconomic characteristics, vary by a factor of two [65]. Comparable differences have als been observed, using similar methods, in Colorado [26] and England [98]. Moreover, British researchers have found that the methods used tend to underestimate the difference in need between very urban and other areas [59]. One may therefore expect that, in very urban areas, and even more so in areas that are also socio-economically disadvantaged, the proportion of the population requiring ACT services would be even greater than what is estimated here.

Moreover, the level of need in areas that include a psychiatric hospital are probably even greater, given the migration of very ill individuals towards these hospitals. Upon discharge, these individuals often settle near the hospital. Thus, on the basis of questionnaires administered to all the psychiatrists at *Hôpital Louis-Hippolyte Lafontaine*, Dr. Lesage and colleagues estimated that approximately 3 persons out of 1000 in their territory would benefit from ACT-like services (defined as needing 2 hours per week or more of follow-up services). Taking these various estimates into account, we will assume, in section 7, that the proportion of the population that ideally would receive ACT services in this hospital's territory is between 1 and 2 out of 1,000.

With an average ratio of one ACT team member for every 10 clients, this means that Quebec would need about 500 to 700 ACT staff. We

must emphasize that these figures only apply to ACT: the number of staff required to provide less intensive case management services would be much greater. In Michigan, for example, there are approximately 43,000 consumers receiving less intensive (and, in most instances, non-medical) case management services. This number is approximately 6.5 times the number of ACT clients. A similar proportion in Quebec, with a ratio of 25 clients per staff member instead of 10, would require between 1,300 and 1,800 case managers in addition to staff belonging to ACT teams.

5. TWO ACT-RELATED PROGRAMS IN QUEBEC

Although the above-cited results describe a fairly consistent pattern, most come from American studies. The question remains whether the ACT model can successfully be integrated into the Quebec mental health network, and whether the positive results observed elsewhere—particularly the economic benefits—could be reproduced here.

In fact, a growing number of programs already exist in Quebec that offer services more or less loosely based on the ACT model. Many of these have arisen from community organizations: for example, Forward House, Project ARC, *Projet Suivi Communautaire*, *Diogène*, *Perspectives Communautaires*, *Le Fil*, PECH, etc. Some of these programs have been functioning for many years and exhibit unarguable expertise in the follow-up of people with severe mental illness.

There are also a few programs based in CLSCs: in Huntingdon and Portneuf, for example. Finally, a number of hospital-based programs also exist: the *Service d'accompagnement et de soutien communautaire* (*SASC*; "Community Support Service"), which operates out of the *Centre hospitalier Pierre-Janet* in Hull, the *Centres d'intégration communautaire* (*CIC*; "Community Integration Centres"), based at the *Centre hospitalier du Centre-de-la-Mauricie*, the PACT program at the Douglas Hospital, the Community Link program at the Montreal General Hospital, and more recently the program at *Hôpital Louis-Hippolyte Lafontaine*. Several more programs are currently being implemented.

At the time this study was undertaken (late 1996), none of these programs (whatever their organizational origin), except one, had yet been subject to any rigorous evaluation.[19] In order to assess the relevance of the ACT model to Quebec, we decided to examine hospital-based programs. Such programs can most easily integrate a psychiatrist and nurses, which—all else being equal—is preferable in an ACT program, since it facilitates a better integration of services.

We thus identified two Quebec programs that bear some similarity to the ACT model and that appear to have been functioning successfully for at least a few years: the *Service d'accompagnement et de soutien communautaire* in Hull, and the *Centre d'intégration communautaire* in Shawinigan.[20]

We adopted a similar approach in both cases: first, we evaluated to what extent the program could be viewed as an adaptation of the ACT model. Second, we attempted to evaluate the net economic impact of the program. To do so, we obtained a random sample of registered clients, and measured their use of hospital services before and after entering the program. We then calculated the costs of these services in order to compare them before and after program entry.

5.1 HULL'S *SERVICE D'ACCOMPAGNEMENT ET DE SOUTIEN COMMUNAUTAIRE* (*SASC*)

Fidelity to the ACT model. Hull's *SASC* can be viewed as a medium-fidelity adaptation of the ACT model. Its multidisciplinary team includes a general practitioner working as a de facto psychiatrist, a social worker, a nurse, educators and rehabilitation specialists. The staff:client ratio has recently increased, but is still less than 1:20. There are frequent meetings with clients, mostly

[19] The only exception is Dr. Hugues Cormier's study of the Portneuf CLSC program [30].

[20] The *Centre d'intégration communautaire* in Trois-Rivières, which functions similarly to the one in Shawinigan and also operates out of the *Centre hospitalier du Centre-de-la-Mauricie*, was not evaluated for this study; the greater number of hospitals and community organizations there would have complicated the evaluation.

in the clients' own environment. Normally, however, the service only operates during regular office hours. When necessary, staff are available evenings and weekends by prior arrangement, and they coordinate with crisis-intervention services and emergency rooms.

Table 5.1 summarizes to what extent Hull's *SASC* program conforms to the ACT model. It has been shown that the characteristics of the model listed in the table, drawn from the Dartmouth ACT Scale, make it possible to accurately distinguish adaptations of the ACT model of varying levels of fidelity as well as case management programs [104].[21]

Impact on clients. The impact of *SASC* in Hull on client symptoms, social adjustment, etc., has not yet been carefully examined. The only relevant data available to us came from a survey, conducted by *SASC*, of a random sample of 28 clients who had received services in 1995-1996. On a scale of 1 to 4, with 4 representing the highest rating, the average level of satisfaction with services was 3.4.

Net costs. For this same random sample of clients from 1995-1996, we obtained detailed information on use of hospital-based services (including those dispensed by *SASC*), for a period of approximately 3 years before they began treatment with *SASC*, and for as many months as possible thereafter. We used the *Centre hospitalier Pierre-Janet's* financial statements, together with information from its accounting department, to calculate the unit costs of services (see Appendix A).

Figure 5.1 shows the estimated distribution of costs for this sample. We estimated that *SASC* achieved average annual savings of approximately $7,500 per client for hospitalizations (reflecting a 77% reduction in hospital days). It saved an additional $1,500 in outpatient clinic services, for a total savings of approximately $9,000. The net average annual cost of treatment provided by *SASC* was approximately $5,000 per client. Thus, the net annual savings in hospital services per client was estimated to be $4,000.

It is interesting to note that this overall reduction hides an important difference between clients who were hospitalized for psychiatric reasons during the preceding three-year period (about 70% of the clients), and those who were not (Figures 5.2 and 5.3). For the former group, Figure 5.2 shows average annual savings of almost $6,600, whereas the latter group generated net additional annual costs of almost $2,800.

This analysis has limitations that should be kept in mind. First, the sample size is limited. Second, the enormous decrease in hospital days for clients who were initially hospitalized could at least partly reflect improvements in their condition that would have occurred anyway. Also, we were unable to directly evaluate the possible impact of *SASC* on housing costs, community services or hospitalizations in other institutions. Use of services in other hospitals is likely to be negligible, for when *SASC* clients seek emergency treatment elsewhere, they are normally referred to the *Centre hospitalier Pierre-Janet*. The costs of housing—as a substitute for hospitalization—could represent an additional, per-client expense for the network of a few hundred dollars per year (see below). We were not able to evaluate the costs to community organizations. However, overall,

[21] Using this scale, it is possible to assign a score from 1 to 5 to each of these characteristics. Reliable assignment of a score requires, however, a fairly elaborate collection of data by one or more outside evaluators, which seemed to go beyond the requirements of the question addressed here.

Table 5.1 : Characteristics of the ACT model compared with Hull's *Service d'accompagnement et de soutien communautaire*

ACT model	*Service d'accompagnement et de soutien communautaire* in Hull
Intensity and team base	
• **Frequent contacts:** up to 4 per client per week *on average*	• Frequency and intensity not measured but less than these levels (see ratio)
• **Intensive services:** up to 2 hours per client per week *on average*	• Between 1:15 and 1:20
• **Small staff:client ratio:** 1:10	• Frequent informal exchanges, but team meeting is weekly
• **Daily team meetings**	• This characteristic was not measured. Clients see staff from different disciplines as needed
• **Shared caseload:** the majority of clients meet more than one team member over the course of a given week	
Responsibility and community involvement	
• **Work in the community:** up to 80% of staff time	• Yes
• **Control over hospital admission decisions:** the team is involved in up to 95% of admissions	• If not 95%, at least a large percentage
• **Clearly-specified admission criteria:** the team ensures that all the clients it serves meet clearly specified admission criteria	• Only difficult cases are taken, but admission criteria are flexible
• **Direct provision of services:** the team itself provides all psychotherapy, supported housing, dual diagnosis, supported employment and rehabilitation services	• Psychotherapy: yes; housing, employment: linkages with other community resources; substance abuse treatment: no; rehabilitation: yes
• **Involvement with others with whom clients interact:** up to one contact per week per client with family, landlords, employers, etc., to support them and develop their skills at helping the client	• Perhaps not as many as one per week, but such contacts are common
Tenacity	
• **Time-unlimited services:** the team continues to serve a client as long as needed	• Files are never closed permanently
• **Assertive outreach:** the team uses carefully chosen methods to maintain its relationship with the client, including legal means when necessary	• Yes
• **Long-term engagement:** client turnover rate is fewer than 5% per year, maintaining service intensity at mutually acceptable levels	• Yes
• **Participation in discharge planning:** in up to 95% or more of cases	• Generally, no

Table 5.1 (Cont'd) : Characteristics of the ACT model compared with Hull's *Service d'accompagnement et de soutien communautaire*

ACT model	*Service d'accompagnement et de soutien communautaire in Hull*
Integrated Dual-Diagnosis Treatment	
• **Individualized treatment for persons with dual diagnosis**	• No
• **Treatment groups for people with dual diagnoses:** half or more of staff involved participate in at least one meeting per week	• No
• **Dual-disorder model:** step-wise treatment model, favoring behavioural over confrontational approaches, taking into account interactions between mental illness and substance abuse. Long-term goal is abstinence. Team provides treatment directly.	• No
Specialists on the team	
• **Nurse:** at least one nurse per 50 clients	• One nurse for more than 100 clients
• **Psychiatrist:** at least one half-time psychiatrist per 50 clients	• One general practitioner with experience in psychiatry
• **Substance abuse specialist:** at least one person with one year of academic training or experience	• Not part of the team, but works with some of the clients
Division of work	
• **Team coordinator provides direct services:** half of time or more	• Yes
• **Few new clients accepted each month:** no more than 6 per month on average during the previous 6 months	• Yes

the results suggest that services provided by *SASC* reduced the health care system's net operating expenses.

5.2 SHAWINIGAN'S *CENTRE D'INTÉGRATION COMMUNAUTAIRE*

Fidelity to the ACT model. The *Centre d'intégration communautaire* (*CIC*), based in Shawinigan, represents a more complex treatment model for people with severe and persistent mental illness. It was created to meet the needs of a more heterogeneous clientele than is usually served by an ACT program. In fact, *CIC* is made up of three subteams. Two of these, comprised of 4 statt members each, provide mostly case management services, with a staff:client ratio of 1:25 or 1:30. The "residential" subteam is comprised of four so-called "educators," and treats the most difficult clients, with a ratio of 1:12. This group may use the services of nurses on the "personalized services" subteam.

A psychiatrist works at *CIC* as a clinical consultant, but there is no physician on the team who provides services directly to the clients. *CIC* does not provide direct services for substance abuse but rather works/ in coordination with another service that focuses on substance abuse treatment.

Figure 5.1 :

Annual costs of resource use before and after entering the *Service d'accompagnement et de soutien communautaire du Centre hospitalier Pierre-Janet* (n=28)

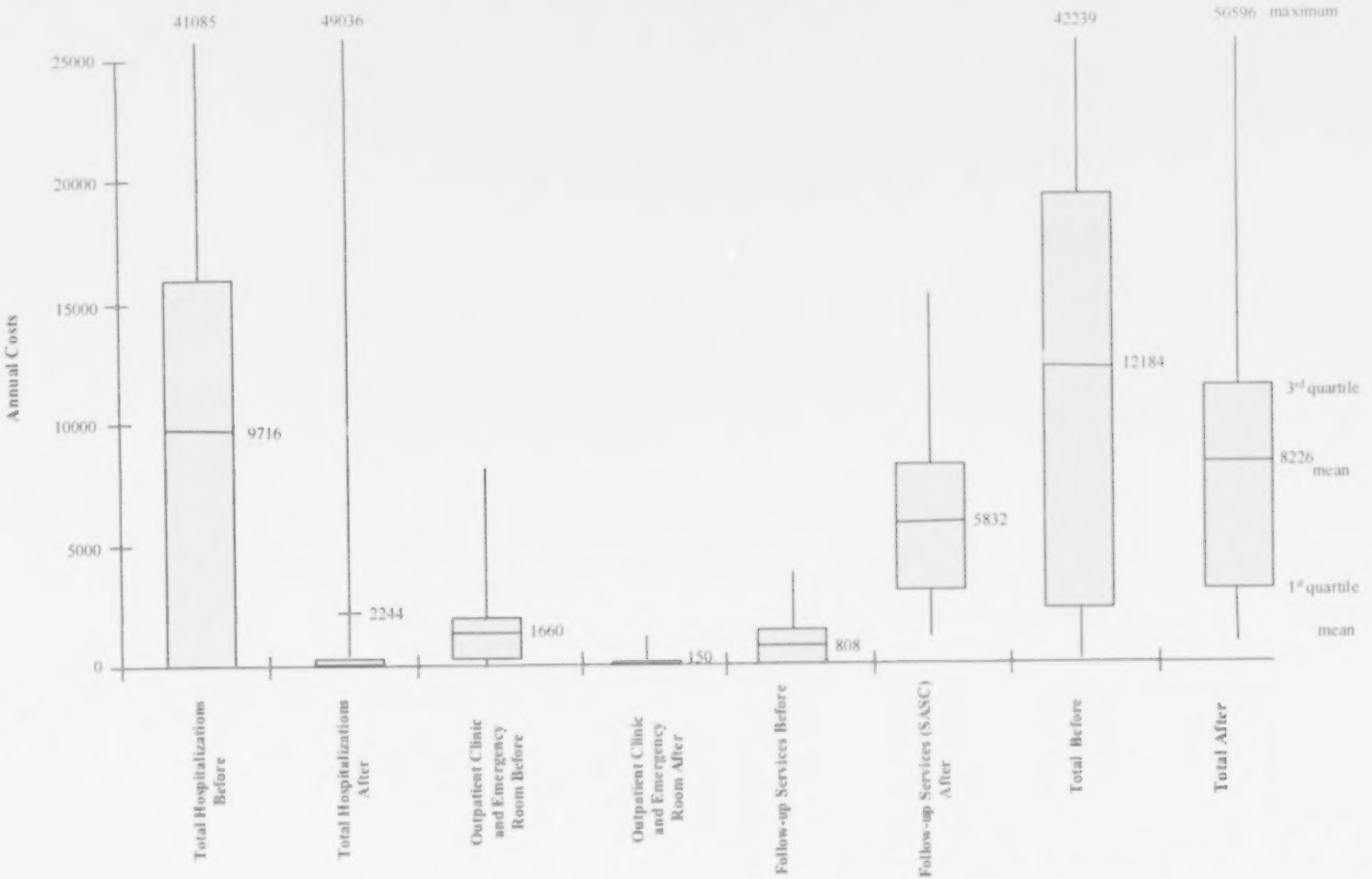


Figure 5.2 :
Annual costs of resource use before and after entering the *Service d'accompagnement et de soutien communautaire du Centre hospitalier Pierre-Janet*, for clients with psychiatric hospitalizations prior to entering the program (71 % of inscriptions)

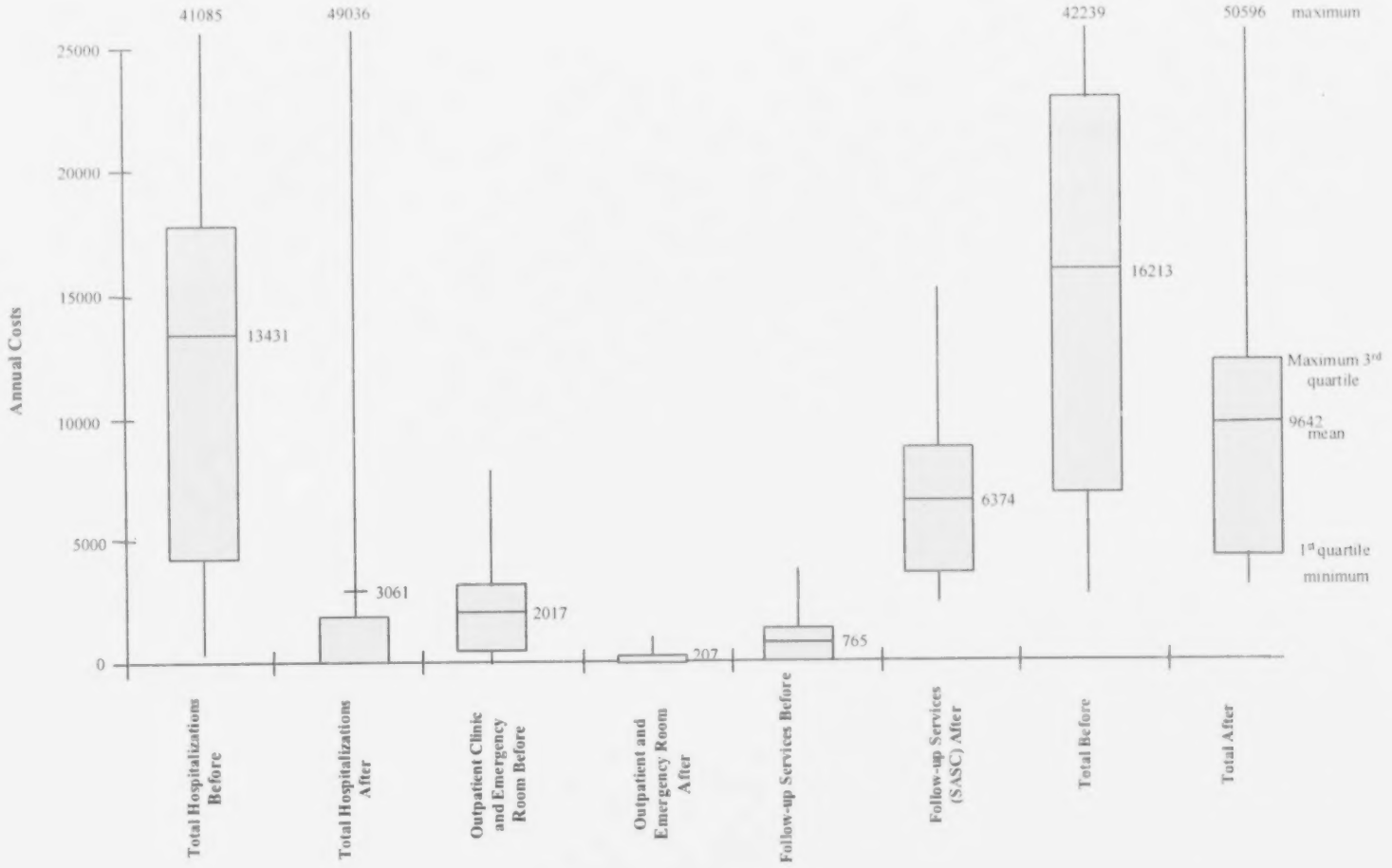
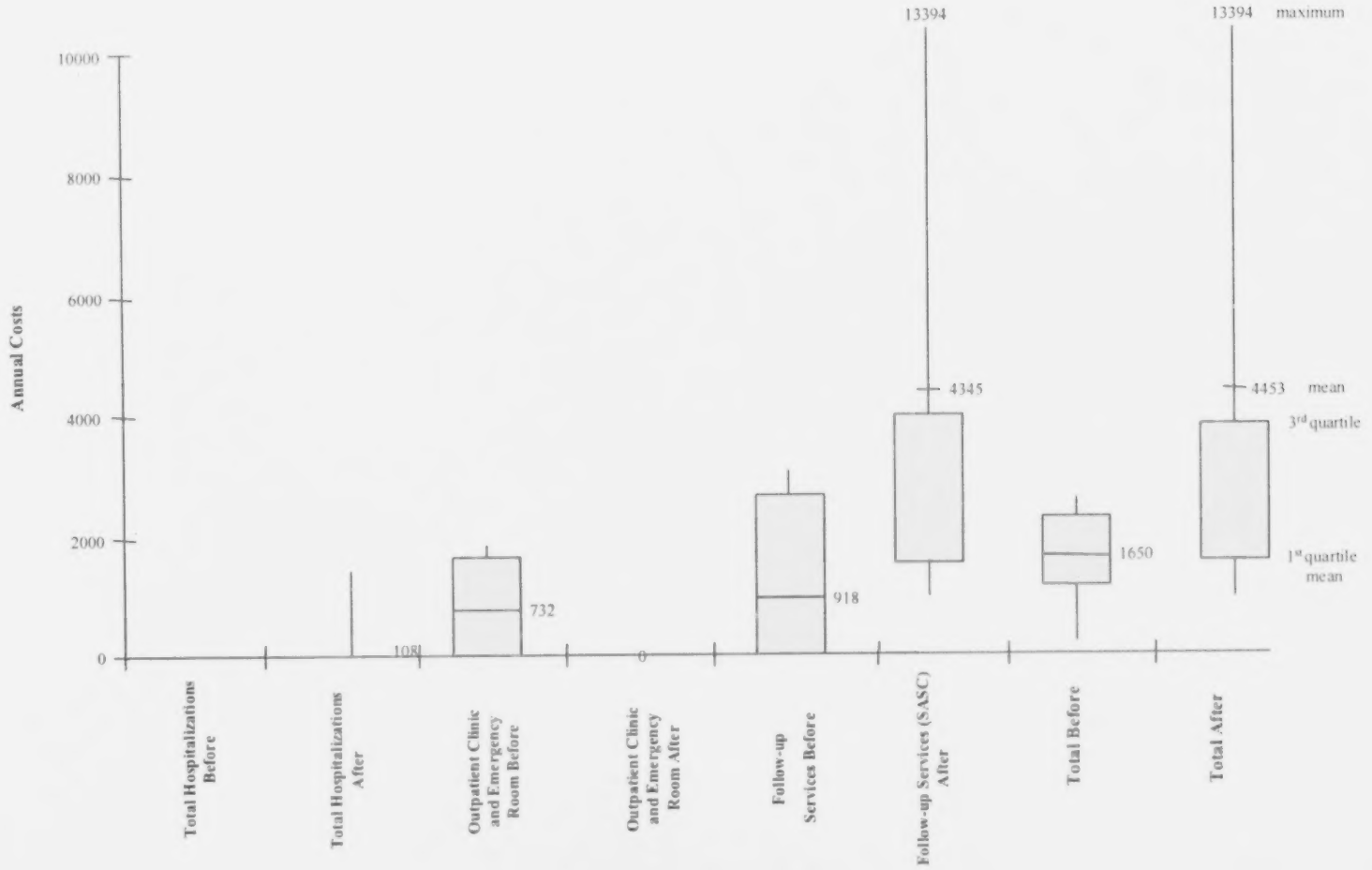


Figure 5.3 : Annual costs of resource use before and after entering the *Service d'accompagnement et de soutien communautaire du Centre hospitalier Pierre-Janet*, for clients without psychiatric hospitalizations prior to entering the program (29 % of clients)



Thus, *CIC* provides fewer direct services than would be offered by a high-fidelity *ACT* program. However, the residential subteam does use a team approach, services are provided almost exclusively in the clients' own living environment, and they are even provided on evenings and weekends. It therefore seems reasonable to view *CIC* as a variant of the *ACT* model. Table 5.2 summarizes the similarities and differences between *CIC* in Shawinigan and the *ACT* model.

Impact on clients. As in the case of the Hull program, the impact that *CIC* in Shawinigan has on client symptoms, social adjustment, etc., has not yet been carefully evaluated. The only relevant data available to us came from a 1995 survey that was mailed out to 108 clients. Fifty-nine of them (55%) responded, with 95% stating that they were either satisfied (25%) or very satisfied (70%) with the "information and treatment provided" by the staff member assigned to them. Almost identical percentages were obtained in response to a question concerning the "quality of inter-personal relationships" between clients and staff members.

Net costs. From a random sample of 147 people registered at *CIC* in Shawinigan in 1991-1992, we were able to obtain detailed information concerning their use of hospital services for a period of 3 years before registration, and for the 3 years thereafter. We calculated the unit costs per service, with the same methods that were used in the analysis of *SASC* in Hull (see Appendix A).

As shown in Figure 5.4, client registration at *CIC* was associated with an average decrease in hospitalization costs of approximately $3,700 per year, due to a reduction of 37% in hospital days. We also observed an average increase of approximately $300 per year in outpatient clinic operating costs. Based on a separate sample, we also evaluated the impact of client registration at *CIC* on housing costs; overall, these did not appear to be substantially changed. The average annual cost per client-year of *CIC* itself, i.e., the cost calculated on the basis of continuous treatment of each client for a whole year, was around $5,500, including indirect costs. (If instead the number of *CIC* clients per year was counted in accordance with Ministry rules, i.e., each person registered at *CIC* that year—if only for 1 week—counts as a client, the cost per client was less than $3,000[22]). These figures suggest that the net cost of the Shawinigan *CIC* was about $2,100 per client-year.

Figures 5.5 and 5.6 show that, as in Hull, clients who were hospitalized during the 3 years prior to registering in the program experienced a reduction in cost of about $6,200 during the period of their first registration, which more than compensated for the cost of *CIC* services. In contrast, clients with no previous hospitalizations incurred additional treatment and housing expenses at a rate of $3,800 per year during their first registration period.

The same reservations we expressed concerning the accuracy of estimates for *SASC* in Hull also hold true for *CIC* except that, for Shawinigan, we were able to evaluate the impact on housing costs with greater accuracy, and our sample was much larger.[23]

It should also be kept in mind that these estimates are based on a comparison of the pre-treatment period with the treatment period – the period of the first registration. If we assume that the treatment clients received during that first

[22] It is fairly common for someone to be registered at *CIC*, leave after a few months or years, and then to re-register. This is partly a reflection of the approach at *CIC*, which fairly readily accepts "de-registration," but without losing touch with the client. This de-registration period can be viewed as a time of "positive withdrawal."

[23] Shawinigan's sample is larger than Hull's because the former hospital was able to make more resources available for transcribing the non-computerized medical records, from which all the data used were obtained.

Table 5.2 : Characteristics of the ACT model compared with Shawinigan's *Centre d'intégration communautaire

ACT model	*Centre d'intégration communautaire* In Shawinigan
Intensity and team base	
• **Frequent contacts:** up to 4 per client per week *on average*	• Frequency and intensity not measured but can exceed these levels
• **Intensive services:** up to 2 hours per client per week *on average*	• 1:12
• **Small staff:client ratio:** 1:10	• Frequent informal exchanges, but team meeting is weekly
• **Daily team meetings**	• No. There is a primary staff person who works with the support of the team.
• **Shared caseload:** the majority of clients meet more than one team member over the course of a given week	
Responsibility and community involvement	
• **Work in the community:** up to 80% of staff time	• Yes
• **Control over hospital admission decisions:** the team is involved in up to 95% of admissions	• Yes
• **Clearly-specified admission criteria:** the team ensures that all the clients it serves meet clearly specified admission criteria	• No medical referral required. Overall admission criteria for *CIC*.
• **Direct provision of services:** the team itself provides all psychotherapy, supported housing, dual diagnosis, supported employment, and rehabilitation services	• Psychotherapy: some; supported housing and employment: yes; substance abuse treatment: two contact persons on team ensure linkage with specialized program; rehabilitation: yes
• **Involvement with others with whom clients interact:** up to one contact per week per client with family, landlords, employers, etc., to support them and develop their skills at helping the client	• Perhaps not as many as one per week, but such contacts are common
Tenacity	
• **Time-unlimited services:** the team continues to serve a client as long as needed	• Yes
• **Assertive outreach:** the team uses carefully chosen methods to maintain its relationship with the client, including legal means when necessary	• The client is allowed to become less involved, but contact is maintained. Legal mechanisms reserved for dangerousness.
• **Long-term engagement:** client turnover rate is fewer than 5% per year, maintaining service intensity at mutually acceptable levels	• Low turnover rate if transfers from one subteam to the next and re-admissions are considered
• **Participation in discharge planning:** in up to 95% or more of cases	• Often, at the request of hospital personnel

Table 5.2 (Cont'd) : Characteristics of the ACT model compared with Shawinigan's *Centre d'intégration communautaire

ACT model	*Centre d'intégration communautaire* in Shawinigan
Integrated Dual-Diagnosis Treatment	
• **Individualized treatment for persons with dual diagnosis**	• No, only through linkage with substance abuse treatment network
• **Treatment groups for people with dual diagnoses:** half or more of staff involved participate in at least one meeting per week	• No
• **Dual-disorder model:** step-wise treatment model, favouring behavioural over confrontational approaches, taking into account interactions between mental illness and substance abuse. Long-term goal is abstinence. Team provides treatment directly.	• No
Specialists on the team	
• **Nurse:** at least one nurse per 50 clients	• One nurse for 60 clients; those of the "personalized services" subteam available as needed
• **Psychiatrist:** at least one half-time psychiatrist per 50 clients	• Clients are treated by a variety of doctors from the hospital and community; one psychiatrist provides clinical consultation only
• **Substance abuse specialist:** at least one person with one year of academic training or experience	• No
Division of work	
• **Team coordinator provides direct services:** half of time or more	• There is one coordinator for both *CIC*s; does not provide direct services
• **Few new clients accepted each month:** no more than 6 per month on average during the previous 6 months	• 5 per month maximum for the residential subteam

*When the information depends on the subteam considered, the response given pertains to the "residential" subteam.

treatment period helped them achieve greater stability, even after they left, the savings achieved by *CIC* may in fact have been underestimated. However, it is difficult to estimate these potential additional savings.

Figure 5.4 :
Annual costs of resource use before and during first registration at the Shawinigan's *Centre d'intégration communautaire* (n=147)

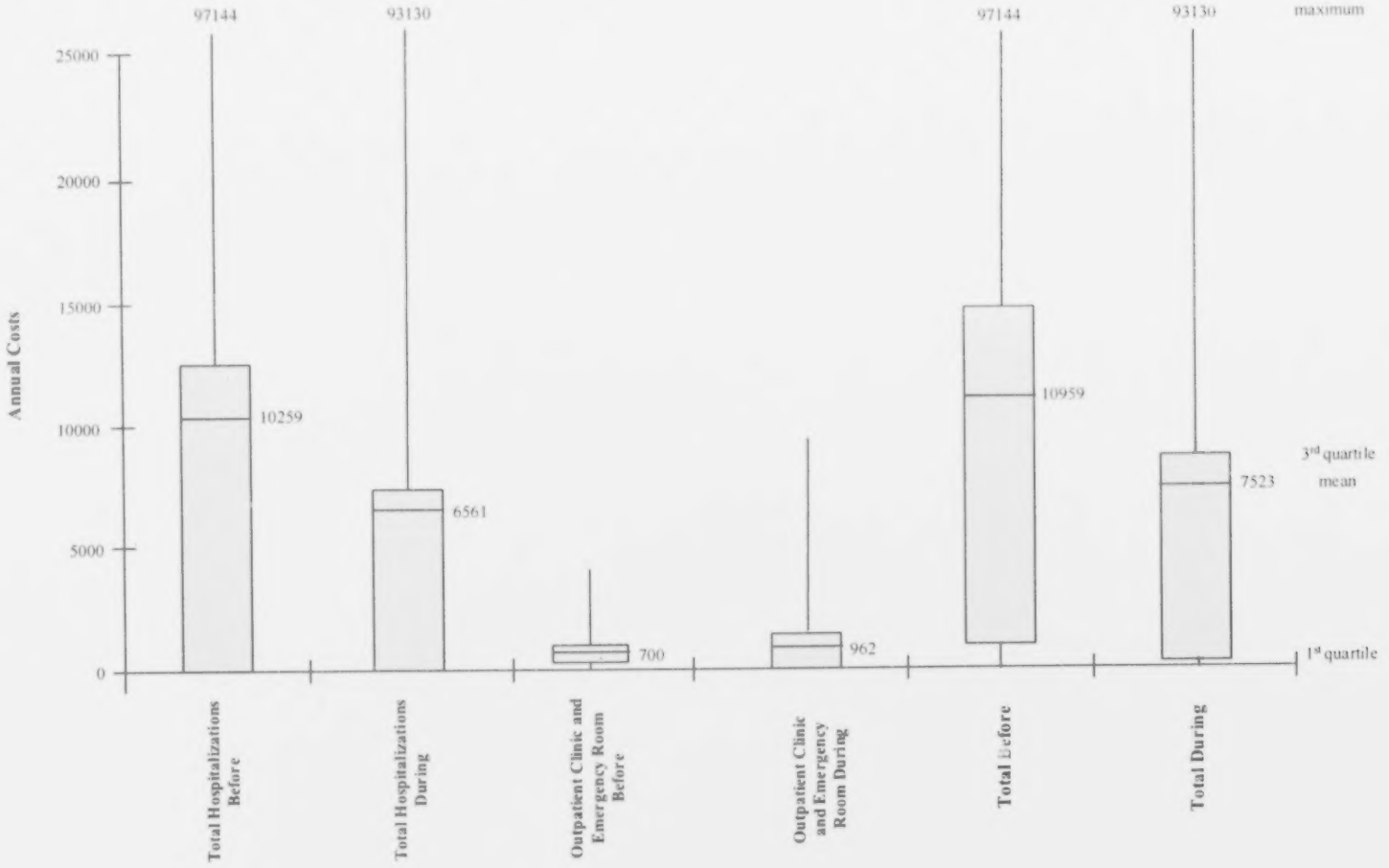


Figure 5.5 :

Annuals costs of resource use before and during first registration at the Shawinigan' s *Centre d'intégration communautaire*, for clients with psychiatric hospitalizations prior to registration (70% of registrants)

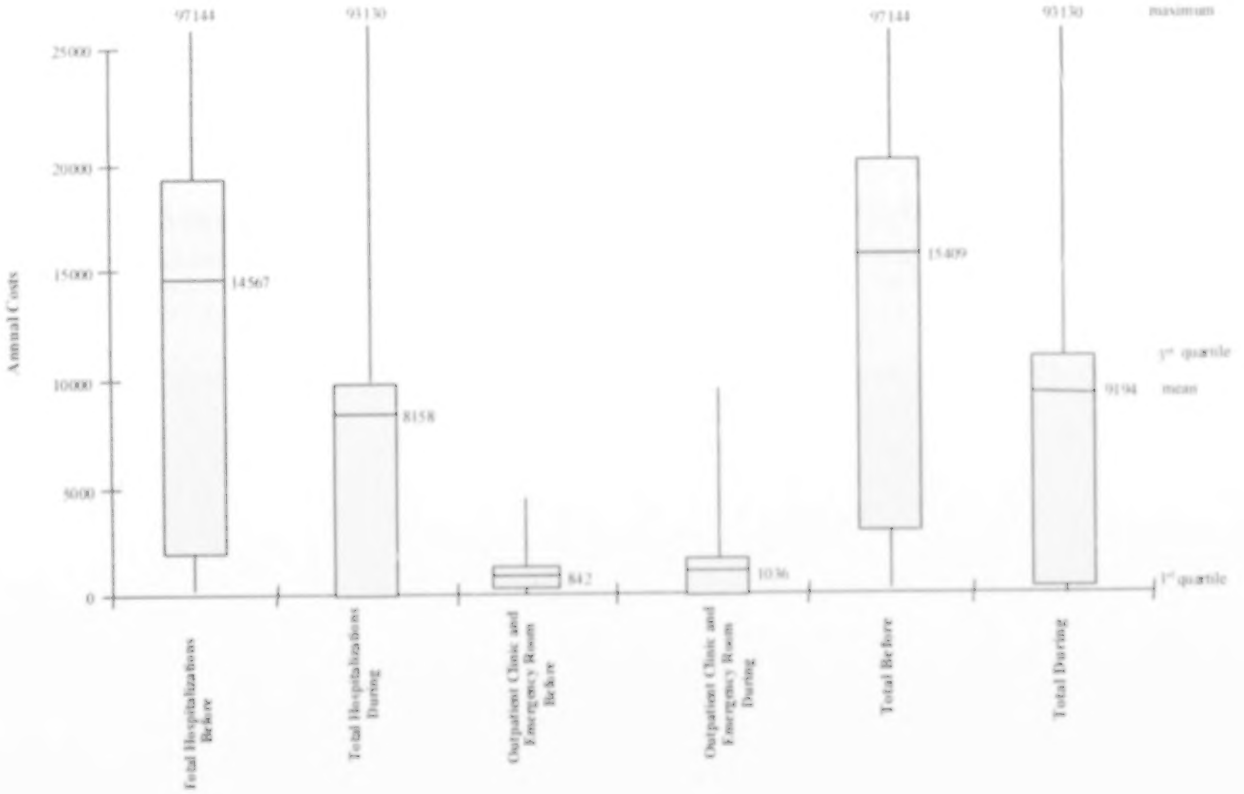
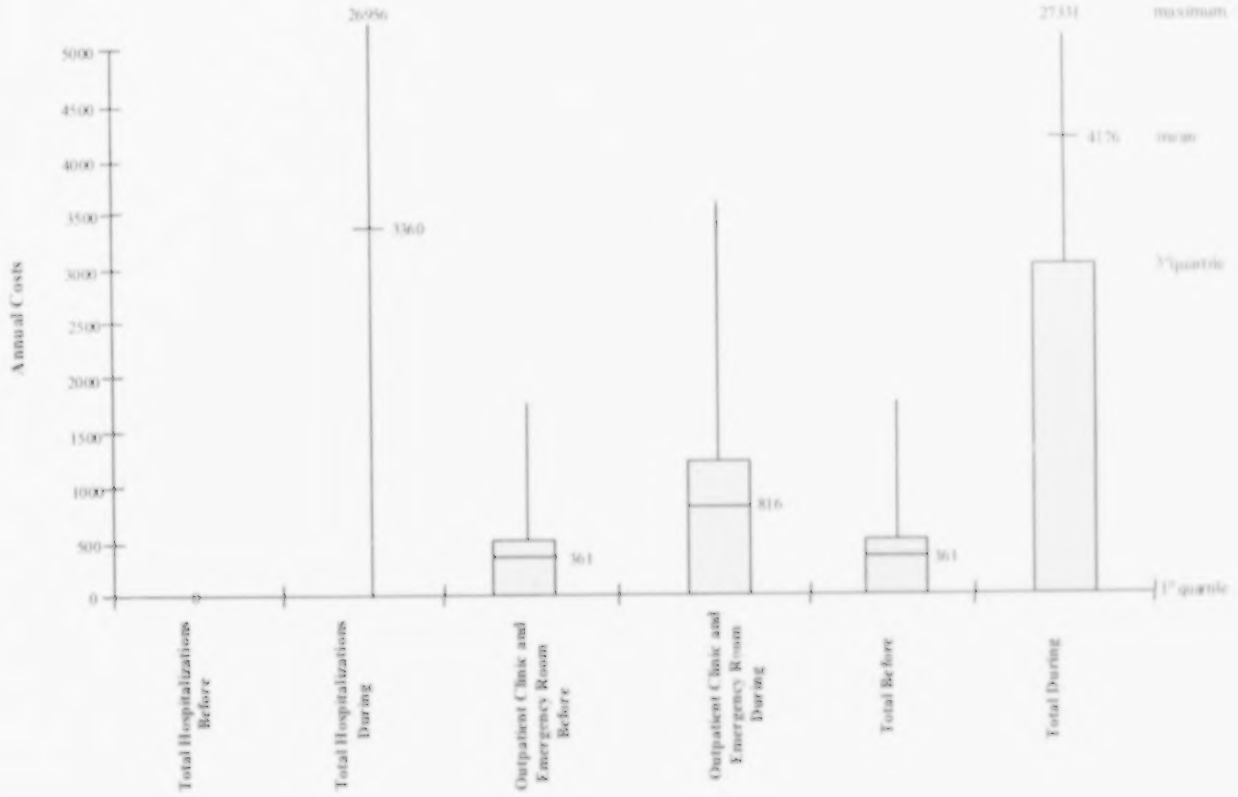


Figure 5.6 :

Annual costs of resource use before and during first registration at the Shawinigan's *Centre d'intégration communautaire*, for clients without psychiatric hospitalizations prior to registration (30% of registrants)



It is also difficult to explain why Hull achieved a 77% reduction in hospitalizations, compared to Shawinigan's 37% reduction. Sub-analyses show that the disparity is not due to a difference in the proportion of clients with previous hospitalizations. It is possible that the *CIC* clientele is more severely ill than the *SASC* clientele: the hospital in Shawinigan has had a large number of long-term beds since 1976, which would have attracted very ill patients from neighboring areas, whereas the hospital in Hull has had these only since 1990. To explain this disparity, a more detailed comparison than was possible to conduct for this study would need to be done.

5.3 Conclusions

Both programs studied here are adaptations of the ACT model that have retained many of its most important features, as shown in Tables 5.1 and 5.2. The retrospective data we had to rely on, in the absence of a randomized controlled trial, reveal a pattern consistent with what the literature had led us to expect: both of these programs have resulted in substantial decreases in hospital use.

It should be noted that both programs provide services to a relatively high proportion of clients with no previous hospitalizations (approximately 30% have no hospitalizations in the previous 3 years). In addition to the clinical benefits for this group of clients, this practice may generate savings for the health care system by targeting people whose condition, in the absence of these services, may have deteriorated to the point of requiring a significant number of hospital days. Such an increased cost-effectiveness (improved quality of care *and* reduced costs) is not measured by the comparison method used in the present study. If both programs restricted their clientele to people with multiple re-admissions, the savings achieved in terms of hospital days would obviously be greater.

6. ADAPTABILITY OF THE ACT MODEL TO THE QUEBEC CONTEXT

The previous section shows that programs which resemble the ACT model can be implemented in Quebec and reduce hospital days to a degree comparable to that which has been reported elsewhere. We address here three important issues that arise as we contemplate the adoption of the ACT model in Quebec. These issues are: the nature of the relation between staff and clients, required changes in professional roles, and linkages across organizations.

6.1 RELATIONS BETWEEN STAFF AND CLIENTS

Quebec law provides considerable protection for clients' rights, and there is growing sensitivity to the need to respect their right to self-determination. Any assumption of responsibility for vulnerable individuals by the community—indeed any helping relationship—raises some risk of paternalism and coercion. ACT presents a particular risk in this regard, as it involves several individuals intervening in a concerted manner in almost all aspects of a client's life.

How best to manage this risk is a complex subject, which has generated considerable debate in the United States as well as in Quebec [31, 34, 52, 101]. It cannot be discussed in detail in a report of this kind, beyond a few general observations:

- Under certain circumstances, a limited use of coercion can make it possible for a client to maintain living conditions which, on the whole, he or she prefers [34, 52]. For example, the team may control part of the client's welfare cheque to ensure that rent is paid on time – preventing the client from spending the money in an impulsive fashion and being evicted later on. ACT proponents in the United States go so far as to say that, in some cases, clients may benefit in the long run from coercive legal mechanisms to ensure that they take their medications. For example, the ple, the regular taking of prescribed medications, ensured by an ACT team, may make it possible for a client to attain a cherished personal goal, such as, again, maintaining independent housing [34, 101].

- Excessive coercion quickly destroys any relationship of trust between the client and the team, rendering any long-term follow-up of the client—a hallmark of ACT—difficult [34]. A collaborative rather than coercive approach is more likely to be effective in the long run [101].

In this regard, the Rhode Island state coordinator for ACT, Ms. Gloria Mazza, proposes the following arguments. In her view, ACT—precisely because it is such a powerful tool—can yield impressive results while fully respecting the client's autonomy and dignity. It is therefore possible to achieve important client gains without having to resort to threats or conditions (Gloria Mazza, personal communication, February 1998).[24] For example, it is possible, by first developing trusting relationships with clients, to bring them to accept taking their medications. Then, staff can negotiate with the client on the dose, paying attention to his or her physical, mental and behavioral responses to the medication [101], which may be observed and discussed on an almost daily basis by the team. The quality of the relationships between the client and the members of the team is always viewed as primary (Gloria Mazza, personal communication, February 1998).

The fundamental attitude of the staff towards their clients will contribute a great deal to the

[24] At the time of writing, Rhode Island had 13 ACT teams, for whom Ms. Mazza was responsible, on behalf of the state government, both to evaluate and to give technical support. The Rhode Island ACT program (along with that of Wisconsin) is considered to be one of those in the United States that adheres most closely to the ACT model, as described by Stein and Test.

empathy, energy and creativity they will deploy to help clients. Such an attitude is difficult to acquire. This implies that preference should be given, in hiring, to persons who see themselves as more similar to clients than dissimilar, and who are thus naturally inclined to treat them with empathy and compassion (Gloria Mazza, personal communication, February 1998). The inclusion of a client, or consumer-worker, as a full-fledged member of the team can also help to foster such an attitude within the team [38, 101].

Thus, the ACT model can be viewed as a means of grafting the technical expertise of medicine and other helping professions onto a philosophical framework and approach more often associated with community organizations, at least those that pursue rehabilitation goals for their clients. (For an analysis of the various philosophies among community organizations in Quebec, see the article by Corin et al. [29].)

6.2 Need to define new professional roles

A second feature of the Quebec context must be considered before implementing ACT programs here: the responsibilities of the team psychiatrist and staff do not correspond to usual professional roles in Quebec. For an ACT team to operate effectively, the nurses (for example) on the team must be willing to perform tasks that may be quite different—often more flexible and generalized—than those acknowledged by their professional association. In Shawinigan, the standard description of tasks had to be revised to clearly define the areas of responsibility common to all staff, while still acknowledging the specific contributions of each profession.[25] The *CICs* had to re-negotiate union contracts to allow staff to work more flexible hours. These negotiations were made without undue difficulty.[26]

The role of the psychiatrist in an ACT team differs from the traditional role of a psychiatrist working with the severely mentally ill in at least three ways:

- The psychiatrist may spend a significant portion of his or her time meeting clients in their own living environment (although in many ACT settings, due to the high value of psychiatrists' time, other staff will usually bring patients in to see the psychiatrist).
- The psychiatrist shares clinical decision-making authority with the team coordinator, who is not a physician.
- The psychiatrist participates in some team interventions with a variety of organizations (CLSCs, etc.)[2, 101].

So far in Quebec, only a handful of psychiatrists practice approximately according to this model. These differences do pose some difficulty. At the same time, the predilection of many Quebec psychiatrists for specialized clinics can represent an advantage: the ACT team is itself a kind of specialized team, which poses significant professional challenges as well as numerous research opportunities.

6.3 Complementarity of ACT with other services

For several years now an approach of *partenariat*, or partnership, has been advocated in the province of Quebec to improve coordination among services, particularly in the mental health area [18]. One of the principles of ACT, howe-

[25] At the *Centre hospitalier Sainte-Thérèse* (now *Centre hospitalier du Centre-de-la-Mauricie*), these changes were made in an official way because the whole institution changed the way it operated. In Hull, on the other hand, where a relatively small program was set up, staff agreed from the start to operate under unusual working conditions.

[26] Among other issues, these negotiations dealt with the number of working hours per day, receiving standard payment for overtime work, and staff members being off work for fewer than 16 hours between shifts (Lucie Gauthier, *Centre hospitalier du Centre-de-la-Mauricie*, personal communication, June 1998).

however, is that the team must provide as many services as possible directly to the client, with little or no recourse to other resources. What, then, are the implications of the development of ACT services for this *partenariat* among resources? As this report explains, on the one hand the direct provision of services tends to reduce the opportunities for partnership. On the other hand, however, the objective of fostering the client's integration into the community results in the team seeking to link the client with a variety of other resources (not just resources in the mental health service network) in his or her environment. One can thus recognize two broad thrusts in the relation between the ACT team and its environment.

a) Services that the team provides directly

Supported housing

Many user surveys indicate that most clients prefer to live in their own apartment or house and not in housing for the mentally ill [28]. ACT facilitates the accomplishment of this objective by helping the client to: plan a budget (using representative payee mechanisms if necessary to ensure that rent is paid on time), take medications and organize daily life. The team also mediates as necessary between the client and the landlord or neighbours. An ACT team will thus seek to avoid supervised housing, looking rather to provide clients with flexible supports to enable them to live in independent housing.

Supported employment

Research conducted over the past 10 years or so indicates that an important proportion of clients can work in regular employment settings, if they are given appropriate supports. Two important success factors emerge out of studies conducted to date:

- ACT and supported employment services should be given by the same team of professionals; and
- The client is placed directly in a regular job that corresponds to his or her preferences and then is given (along with the employer as needed) adequate support [10].

Recent studies, initially carried out in New Hampshire, have shown that programs that work according to these principles can achieve dramatically greater placement in regular jobs in comparison with day programs oriented towards vocational rehabilitation [10]. This general approach is referred to as Individual Placement and Support (IPS).

There are at least two concrete ways of making IPS operational for an ACT team:

- Include on the ACT team one or two specialists in vocational rehabilitation [2]. These specialists do not assume responsibility for the crises that take up a lot of a team's time and energy, focusing instead on finding jobs for clients who want them and supporting them in those jobs[27] (Gloria Mazza, personal communication, February 1998).
- In a centre that provides mental health services to a broad clientele, one includes both an ACTs team and a vocational rehabilitation program [6, 39]. The latter serves some of the ACT clients, but mainly other consumers with less severe illness. Both programs are housed in the same building and their members communicate with each other on a daily basis. (In the US context, Community Mental Health Centres can easily house both program types [6].)

At the time of writing, relatively few ACT teams in the US include vocational specialists operating according to the IPS model [104].

[27] The reason for insulating the vocational specialists from dealing with daily crises is that the crises are likely to assume such urgency that the vocational rehabilitation aspect is neglected.

Substance abuse treatment

Most substance abuse treatment is carried out directly by the ACT team, which includes at least one person with training in this area. At the outset, each client who is or was a substance abuser is identified as being on a scale somewhere between "pre-contemplation" (the client does not see his or her substance abuse as a problem) and stable remission. At each stage, the client is offered a range of treatment options [43, 44, 113]. ACT staff guide the client through the process, for example by bringing him or her gradually, if still at the pre-contemplation stage, to recognize the personal costs generated by his or her substance abuse. Weekly treatment groups led by team members are offered. Participation in groups such as Alcoholics Anonymous may also be offered to some clients, according to their needs and interests (Elaine Martin, Rhode Island team leader, video recording, March 1998). (The confrontational approach that AA groups often adopt contrasts, however, with the non-confrontational, motivation enhancement approach characteristic of the dual disorders model (Tables 5.1 and 5.2)). As for residential treatment for substance abusers, its success rate with the severely mentally ill is low. In conclusion, the integrated approach of ACT means that the team makes very limited use of existing programs and facilities for substance abuse treatment.

Outpatient psychiatric clinics, specialized clinics

A truly multidisciplinary ACT team, including a psychiatrist, nurses, etc., should have little reason to refer clients to an outpatient clinic. Normally, it should likewise be unnecessary to refer clients to clinics specialized for a particular diagnosis, such as schizophrenia: the ACT team that includes a psychiatrist is itself the specialized clinic that has taken responsibility for a client.

b) Links with other resources

In order to foster the fullest possible integration of the client into the community, the ACT team will frequently seek to link the client with a variety of resources and organizations. This could include, on the one hand, specialized mental health resources: self-help groups, social clubs, art-oriented workshops, other leisure-oriented resources, 24-hour crisis centers for teams that do not provide 24-hour coverage or only provide backup coverage at night, etc. On the other hand, there exist a wide variety of organizations and individuals not specialized in the mental health area with which clients can develop beneficial relationships. For example: employers; general practitioners, for physical health issues; CLSCs, if home care for physical health problems is required; merchants, who might find the regular presence of some clients bothersome at first; landlords, who might initially refuse to let apartments to severely mentally ill individuals; welfare offices; sports centres; etc.

In many cases the team's work must be carried out as much with the organizations themselves, to help them accept and deal with the clients in a helpful way, as with the clients to help them act in a more normal manner. The ACT team should also include clients' families in its work, in particular by forming multi-family psycho-educational groups [101].

In conclusion, it is clear that even if ACT insists on direct provision of a large number of services, it collaborates with a great variety of other resources and organizations. In every case the ultimate goal is to foster the client's autonomy and integration into the community, beyond the ACT team itself.

7. NET COST OF ACT

Obviously, ACT programs are fairly expensive. However, as the experience of the Hull program indicates, the savings in terms of hospital days and home-care services may exceed the costs of the program, as well as any additional costs. Aside from the examples of Hull and Shawinigan, we have studied some representative cases and have attempted to estimate the net economic impact (in terms of costs to the health care system) of providing ACT to those likely to benefit from it.

Table 7.1 shows an estimate of the operating costs of an ACT team. For the purposes of this study, we assumed that this team closely follows the model described in section 2, and that team staff are paid in accordance with institutional salary scales (community organization salaries are markedly lower). We also assumed that the team is based in a building separate from a hospital complex, such as a large rented house.

Table 7.1 shows that an ACT team with a staff:client ratio of 1:10 would cost approximately $8,250 per client, per year, including the psychiatric services billed to the *Régie d'assurance maladie du Québec* (the Quebec health insurance board, or RAMQ). This figure is obviously an estimate, since salaries in particular will depend on the professional composition of the team members, and their position on salary scales.

A program based in a community organization, which would not be bound by the collective agreements that dictate wage levels in hospitals and CLSCs, and which would not normally include a physician or a nurse, would cost about $5,000 per client per year. This amount should be compared to about $7,500 per client per year (with the psychiatrist's charges taken out) for an institutionally-based ACT program.

What sort of savings would be generated by an institutionally-based team? A review of the literature presented previously seems to indicate that an ACT program, as described in Table 7.1, would mainly reduce the number of hospital days, and possibly use of the outpatient clinic and emergency room (section 3). The net effect on housing costs is difficult to predict since one should observe both an increase in costs for some previously homeless clients who move to supervised housing, and a decrease for others who move to more independent settings. The increased number of days in the community, resulting from the reduction in the number of hospital days, will also generate a cost.

To estimate the magnitude of these effects, we obtained information on resource use based on patient samples from three different locations: the service areas for *Hôpital Louis-Hippolyte Lafontaine*, for the Montreal General Hospital and finally for the hospital in La Tuque, in Quebec's Mauricie region. Thus, the data from Hull and Shawinigan, two areas of intermediate urbanization, are supplemented by data from two highly urbanized and one rural area.[28]

7.1 PROJECTED IMPACT OF ACT ON NET COSTS TO THE HEALTH AND SOCIAL SERVICES SYSTEM FOR THE *HÔPITAL LOUIS-HIPPOLYTE LAFONTAINE* SECTOR

Approximately 292,000 people live in the *Hôpital Louis-Hippolyte Lafontaine* sector. The very urban character of the territory, its partially eco-

[28] Our original intention was to produce estimates for Quebec City, based on data from the Roy-Rousseau Clinic. However, over the course of this study, the clinic merged with *Centre hospitalier Robert-Giffard*, creating such disruption in the clinic's medical records department that it was impossible to obtain the necessary information in time.

Table 7.1 : Estimated annual per-client operating cost for an ACT team with 10 nurses, social workers, occupational therapists and human relations agents

Type of Expense	Total Yearly Cost	Calculation Assumptions
Salaries	$505,000	6 x $50,000, plus 4 x $35,000, plus $40,000 in overtime pay for evenings and weekends, plus $25,000 for a secretary
Fringe benefits	$65,650	+ an estimated 13% (taking into account the hospital's contributions to employment insurance, the *Régime des Rentes du Québec*[a], the *CSST*[b] and the *Fonds Provincial de Santé*[c])
Office rental, heating, etc.	$36,000	$1,500 per month in rent + $1,500 per month for heating, electricity, telephone and supplies
Cell phones, petty cash, continuing education, etc.	$26,800	$40 per staff person per month for cell phones, $1,000 per month in total for contacts with clients, $1,000 per staff person per year for training
Travel costs	$38,500	$300 per month per staff person (mileage) + $250 per staff person per year (extra insurance costs)
Total direct costs	*$671,950*	
Indirect costs	$67,195	+10% (administration, insurance[d], etc.)
Psychiatrist (part-time)	$85,800	25 hours/week, paid at an hourly rate ($66 per hour), 52 weeks/year
Total costs	**$824,945**	
Cost per client	**$8,249**	Based on a ratio of 1:10

Notes: a. Quebec's equivalent to Social Security Administration; b. the *Commission de la santé et de la sécurité du travail*, Quebec's occupational health and safety commission; c. Provincial health care funding; d. Staff liability insurance is assumed to be borne by the institution to which the team belongs.

nomically disadvantaged character, and the number of severely ill people who have settled in the vicinity of the hospital, suggest that a relatively high proportion of the population should receive ACT services. Based on the evidence presented in section 4, the estimated number of potential ACT clients is between 300 and 600. (This is equivalent, in round numbers, to between 1 and 2 persons per 1,000). This hospital has now added to the staff of its seven satellite outpatient clinics more than 30 case managers who provide services in the clients' own living environments. The impact of this service change is currently being evaluated. We have nonetheless attempted to estimate the economic impact of teams organized according to the Madison model.

How much would it cost to provide ACT services to this number of people? The cost of the ACT services themselves would range from approximately $2,475,000 to $4,950,000, depending on the number of people served, based on the estimated cost of $8,250 per person presented above.[29] In order to estimate the impact on other costs, we obtained three sets of data.

First, we determined the cost of resources used at *Hôpital Louis-Hippolyte Lafontaine*, between July and December 1996, by patients who were

[29] The figures assume that costs increase linearly with the number of people served, which is, of course, an approximation.

in the hospital on October 23, 1996.[30] The data show that, for people with 31 to 45 hospital days, the cost of emergency and outpatient services amounted to about 10% of the hospitalization cost; this percentage decreases as the number of hospital days increases (see Appendix B, Table B.1).

Second, based on the distribution and per-unit cost of the various types of accommodation (other than hospitalization) that were used during the latter half of 1996 by patients with fewer than 45 hospital days per year, we estimated an average cost to the health and social services system (not counting welfare payments) of approximately $10 per night for each hospital day saved (see Appendix B, Table B.2). According to our estimates, the net savings generated by each averted hospital day is $279.

Finally, we obtained the distribution of number of hospital days in 1996 for patients at *Hôpital Louis-Hippolyte Lafontaine* who were hospitalized at least once in 1996 (however briefly), and whose primary diagnoses were either psychoses (other than childhood psychoses such as autism) or personality disorders.[31, 32] Based on these data, the 300 people with such primary diagnoses, and who belong to the group with the most hospital days, consumed approximately 37,550 hospital days in 1996, for an average of 125 days per person (minimum 92 days). If we base our calculation instead on the 600 people who have the most hospital days (irrespective of diagnosis), we get a total of 46,550 days, yielding an average of 78 days per person.

Table 7.2 shows the estimated potential savings of an ACT program at *Hôpital Louis-Hippolyte Lafontaine* that would target these people specifically. The estimated savings are calculated from the perspective of the health and social services system. This perspective attributes to an averted day of hospitalization its full cost, including indirect costs (but minus the $10 per night reflecting the average cost of housing per night outside of the hospital), as well as an estimate of billings by physicians to the RAMQ. (See Appendix A for the method used to calculate indirect costs).

Savings to the health and social services system are substantial, as long as the program reduces hospital days by approximately 50% or more. It is also apparent that savings are reduced, for a given percentage reduction in hospital days, as the number of people served increases. The reason is that the 300 additional people served (from 300 to 600) are assumed to have fewer hospital days on average, and those for whom fewer than $8,250/$279 ≈ 30 days of hospitalization per year are save; cost more in ACT services than they save in hospitalizations/housing. Approximately 150 of the 600 people who would have been served by ACT would have been hospitalized fewer than 30 days in 1996.

This finding of a savings being realized as long as ACT reduces hospital days by at least 50% is robust to plausible changes in assumptions concerning the cost of ACT services, use of the outpatient clinic and emergency room, and the

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[30] The data used to measure resource use for this sample come from a study conducted at *Hôpital Louis-Hippolyte Lafontaine* [64]. The October 23rd date is arbitrary.

[31] We could have excluded personality disorders (CIM-9: 301) from the count as well, since the literature indicates that ACT may not be the best treatment for clients with this primary diagnosis. However, in practice, such people do often receive ACT services, and calculations of average decreases in hospital days resulting from ACT services reflect the inclusion of people with personality disorders in many studies.

[32] Non-specific primary diagnoses represented 40% of the total. These were divided between the two diagnosis groups (295-298 and 301, versus the others) in proportion to the number of individuals in each group. This calculation was done for each group of hospital days. Thus, patients with non-specific primary diagnoses with 1 to 5 days were distributed separately from those with 6 to 10 days, those with 11 to 15 days, and so on until 361 to 365 and 366 hospital days.

Table 7.2 : Estimated total annual savings after implementation of an ACT program in the *Hôpital Louis-Hippolyte Lafontaine* service area

Average Reduction in Number of Hospital Days	Number of People Receiving ACT	Number of Hospital Days Averted	Number of Hospital Beds Saved	Net Savings to the Health and Social Services System
20%	300	7,500	21	($385,000)*
20%	600	9,200	25	($2,370,000)
50%	300	18,800	51	$2,750,000
50%	600	23,100	63	$1,499,000
80%	300	30,000	82	$5,885,000
80%	600	37,000	101	$5,369,000

* In accordance with standard accounting notation, brackets around a number indicate a loss.

nature of alternative housing. With a reduction in hospital days of 50%, the only way an ACT program could fail to generate savings is if there were a substantial increase in emergency room and outpatient clinic use (when we in fact expect to see a decrease), if the use of group-homes and half-way houses increased substantially, and/or if ACT costs were significantly higher than projected. Such a combination of circumstances appears highly unlikely.

It is possible, however, that this method of estimating the savings generated by ACT yields too high a savings, because we used, as an estimate of the value of averting a day in the hospital, the average cost of a bed-day (Appendix A). The reality is that a reduction in the number of beds would not, in practice, produce a proportional decrease in the costs of administration, computer services, etc., of the hospital. If we suppose that the value of averting a hospital day is overestimated by 20%, then the net savings from averting a hospital day becomes $221 (instead of $279).

The savings remain above $100,000 with 600 ACT clients, and above $1,000,000 with 300 clients, still assuming that the ACT programs serve only those people who have accumulated the greatest number of hospital days, and that the reduction in hospital days is 50% or more. In fact, only if the value of a hospital day averted is assumed lower than $214 will providing ACT services to the 600 clients with the most hospital days fail to generate a net savings, and only if lower than $132 if providing ACT services to the 300 clients with the most hospital days.

The savings, however, decrease as the number of people in the program with fewer hospital days prior to treatment increases. For reasons given in section 4, it may be advisable for the hospital to register a certain number of people in the ACT program who, prior to treatment, have relatively few hospital days.

The preceding calculations contain a number of sources of uncertainty and must be interpreted with caution. One should not expect, on the basis of Table 7.2, to necessarily be able to reduce the budget of the hospital if an ACT program is implemented. The calculations do indicate, however, that a well-implemented program, adhering closely to the ACT model and targeting primarily high users of mental health services, can make it possible to close several hospital beds and thus cover its operating costs.

Table 7.3 : Estimated total annual savings after implementation of an ACT program in the Montreal General Hospital sector

Average Reduction in Number of Hospital Days	Number of People Receiving ACT	Number of Hospital Days Averted	Number of Hospital Beds Saved	Net Savings to the Health and Social Services System
20%	80	1,800	5	$46,000
20%	160	2,400	7	($364,000)
50%	80	4,400	12	$1,104,000
50%	160	5,900	16	$1,071,000
80%	80	7,100	19	$2,163,000
80%	160	9,500	26	$2,505,000

7.2 PROJECTED IMPACT OF ACT ON NET COSTS FOR THE MONTREAL GENERAL HOSPITAL SECTOR

Approximately 82,000 people live in the Montreal General Hospital (MGH) sector. If we make the same assumption as for *Hôpital Louis-Hippolyte Lafontaine*, ACT services should be offered to between 1 and 2 people out of 1,000, i.e., between 80 and 160 people. It turns out that MGH has already implemented an ACT-type team, which treats about 65 people. However, when the present study was undertaken, it was too soon to evaluate the impact of this team. We therefore projected the effects of an ACT program at MGH by using the same analytical approach as for *Hôpital Louis-Hippolyte Lafontaine*.

Table 7.3 shows the estimated annual savings generated by an ACT team operating in the MGH sector (see Appendix B, Table B.3 for service cost data). The savings are proportionately larger than at *Hôpital Louis-Hippolyte Lafontaine* because a short-term psychiatric day costs $407 at MGH, compared to $289 at *Hôpital Louis-Hippolyte Lafontaine* (this is largely due to the higher indirect costs at MGH).

Reasoning as we did in the case of *Hôpital Louis-Hippolyte Lafontaine*, we may suppose that the cost of a bed-day was overestimated by 20%. With a net unit cost of $316 (taking into account again the cost of housing outside the hospital, which is avoided when the patient is hospitalized), the savings exceed $500,000. This is true whether 80 or 160 clients with the maximum number of hospital days are served, assuming that the program reduces hospital days by at least 50%. In fact, the savings must decline to $219 per hospital day avoided for serving the 160 people with the most hospital days not to generate a savings; and to $148 if only the 80 people with the most hospital days are served, still assuming a 50% reduction in hospital days.

Again, caution must be exercised in interpreting these results. They suggest, however, that—as in the case of *Hôpital Louis-Hippolyte Lafontaine*—a well-implemented program that targets mostly high hospital users can facilitate the closing of several hospital beds and thus pay for itself.

7.3 AREAS WITH RELATIVELY FEW HOSPITAL BEDS

The Montreal General Hospital and *Hôpital Louis-Hippolyte Lafontaine* are both located in Montreal, where the per capita number of psychiatric beds is relatively high. One might think that ACT would not generate savings for a service area with relatively few psychiatric beds, since that area may have a low proportion of

Table 7.4 : Minimal average number of previous hospital days that an ACT team's clients must have for the savings in hospitalizations to completely offset the cost of the ACT team itself (estimated at $8,250/year)

	Percentage Reduction in Hospital Days		
Savings Associated With One Averted Hospital Day	30%	50%	70%
$250	110	66	47
$300	92	55	39
$350	79	47	34

people with many hospital days. The Outaouais region is such an area, with only 0.3 beds per 1,000 residents, already below the provincial average of 0.4 recommended by the provincial Ministry of Health and Social Services.

The service area comprising Hull and Grande-Rivière has about 100,000 residents, of whom approximately 70 to 100 would require ACT. More than 85% of psychiatric hospitalized patients in the Hull/Grande-Rivière service area are admitted to *Centre hospitalier Pierre-Janet*, and most people hospitalized there are from that service area. However, for 1994-1995 there were 58 people with 135 hospital days or more at the *Centre hospitalier Pierre-Janet*, and 98 people with 95 hospital days or more. It is thus apparent that even in this territory with relatively few hospital beds, an ACT-type program can generate savings – consistent with the results given in section 5.

7.4 General Model for Urban Environments

Table 7.4 generalizes the previous results and shows the minimum average number of hospital days required for an ACT team to yield savings in hospital days equal to its own operating costs, as a function of the average cost of a hospital day and of the average percentage reduction in hospital days. (For an explanation of the calculation methods, see Appendix 3.)

Note that these figures are valid to the extent that the net economic impacts of ACT on other costs are approximately zero, as the review of the literature and the data presented in this document suggest.

Finally, there is no requirement that the net costs of an ACT program be zero: given the benefits in terms of quality of care and satisfaction associated with ACT services, a net increase in costs is justifiable as long as the cost-effectiveness ratio remains reasonable.

7.5 Rural Service Areas

ACT cannot generate savings if the population base is too small or too dispersed. The *Carrefour de la santé et des services sociaux de la Haute-Mauricie* is a case in point. This combined hospital/community services centre located in La Tuque serves approximately 16,000 people. The estimates given in section 4 imply that about 10 to 16 of these should be enrolled in an ACT program. This number is obviously much too low to justify standard ACT services.

Also, in 1994-1995, only 20 people in this service area had more than 30 psychiatric hospital days. In such cases, a less specialized type of case management could be set up, such as was done at the *CICs* in Shawinigan and Trois-Rivières.

8. FURTHER IMPLICATIONS FOR SERVICE DELIVERY

The *Conseil* is well aware, in publishing this report, of the organizational issues it raises for Quebec. In particular, the respective roles of hospitals, CLSCs, and community organizations in the development of ACT services constitute a major issue.

It is the responsibility of the Regional Health and Social Service Boards, based on the guidelines provided by the Ministry of Health and Social Services, to take the necessary initiative and to decide how to allocate resources among these various actors to ensure the development of ACT-like services in their respective areas. The *Conseil*'s analysis does not address questions of that order.

Nonetheless, the ACT model described in this report includes a psychiatrist and nurses, in accordance with the original ACT model [2, 101]. This choice should not be interpreted as favoring the development of ACT services from hospitals as opposed to community organizations. Several arguments may be brought forward to shed light on this question.

On the one hand, studies suggest indirectly that a high fidelity program—including a psychiatrist and nurses—will tend to give better results than a "Bridge"-type adaptation, in which the team does not include a psychiatrist (section 3) [96]. Moreover, almost all ACT programs that have been evaluated included, if not a psychiatrist, then at least one or more nurses. The active support of medication-taking that is an important feature of the ACT model is greatly facilitated if the team includes at least nursing personnel.

On the other hand, the literature does not contain a single direct comparison of a program based in a community organization with a hospital-based program. Moreover, a team that does not include any nurses might nonetheless acquire considerable knowledge of medications, and develop close relations with health care professionals, which would enable it to compensate for this handicap in whole or in part. In addition, the culture of community organizations may facilitate the long-term maintenance of this fairly demanding type of work (Gary Bond, personal communication, August 1998). It is obvious also that the experience and quality of the staff on a team will have a great deal to do with its effectiveness. The superior outcomes that have been obtained in comparisons between ACT and other services tend to be reduced when those other services involve excellent case managers organized according to a different model than ACT, working in partnership with high quality services [41].

Considering all of these arguments together, it seems nonetheless preferable for a community organization that wishes to provide ACT services to hire some nurses. This could be difficult in the current Quebec context, where a shortage of nurses exists, and where a collective agreement ensures much higher salaries than those that can be offered by community organizations. The possibility, then, exists to form ACT teams from a combination of personnel from institutional settings and community organizations, as has already been done in the *Côte-Nord* region (Dr. James Farquhar of the Douglas Hospital has become known in Quebec for his arguments in favour of this concept). In such a case, increasing the salaries of community workers could help alleviate difficulties that might otherwise emerge.

9. DEVELOPING AND DISSEMINATING PROGRAMS BASED ON THE ACT MODEL

The preceding sections have emphasized ACT's clinical advantages, its cost-effectiveness and its adaptability to the Quebec context. These suggest two general conclusions concerning how the provincial mental health system should respond to the ACT model. First, the number of ACT programs should be increased. Second, we need to ask ourselves how the ACT model can best be enhanced to optimize its effectiveness and cost-effectiveness in Quebec.

One might expect that the dissemination of the ACT model will be difficult, as this organizational approach to services profoundly alters the work environment, as well as the nature of relationships among professionals. The experience of other localities shows that, in practice, ACT programs tend to evolve toward variants that research indicates are less effective. For example, there is a tendency toward providing more treatment in staff members' offices, or toward not sharing caseloads among staff members. As evident from chapter 2, ACT is a complex model of bio-psychosocial intervention. A full development of its potential requires a sustained collective effort from team members.

Accordingly, in this section we bring together information from both the literature and experts in other localities, in order to identify factors that could facilitate dissemination of the ACT model in Quebec. The following measures could facilitate a rapid and effective adoption of ACT into the Quebec mental health services network:

- Issue practice guidelines describing the characteristics, principles and target population of the ACT model.
- Make use of financial incentives to encourage the implementation of new programs as faithful as possible to the ACT model, and that particularly target those who are frequently re-hospitalized.
- Give preference to programs that can demonstrate a capacity to collaborate effectively with hospital workers.
- Give ACT teams access to clinical consultants who can provide technical support.
- Evaluate programs on a regular basis.
- Increase financing for research into ACT-like programs.

Below we provide some explanation on each of these six measures.

9.1 ISSUE GUIDELINES DESCRIBING THE CHARACTERISTICS, PRINCIPLES AND TARGET POPULATION OF THE ACT MODEL

In July 1997, the government of Ontario announced a new policy advocating the ACT model for certain people with severe and persistent mental illness. At the same time, detailed guidelines on ACT's principles and operational methods were issued [89]. A number of American states have also issued documents describing the features of ACT programs that they wish to subsidize. The state of Rhode Island's list is generally acknowledged to be the most complete, and work is underway to compile a standard list, which any state could use [75].

It is important to publish written guidelines specifically intended for a Quebec audience, for several reasons. First, a formal document is needed in the field, that would clearly describe the model being proposed: its principles, operational

tional methods, target-clientele, and the reasons for adopting it. This kind of overview is not readily available at the present time, since the available literature on the ACT model is fairly complex. The fact that most of it is in English presents an added difficulty for many Quebec workers.

Guidelines should not only reflect the insights provided by the scientific literature, but also provide concrete information as to the best way of integrating the ACT model into the various kinds of environments in Quebec.

To avoid any duplication of efforts, the guidelines should be issued by the Ministry, rather than the Regional Health and Social Service Boards. The latter could subsequently adapt them where necessary and implement them in their respective regions.

9.2 Use financial incentives

In order to motivate institutions to implement ACT programs, *CETS* suggests that the Ministry and/or the Regional Health Boards consider the use of financial incentives. Such incentives could both speed up the dissemination of programs and increase fidelity to the ACT model.

The way in which budgets are allocated in Quebec actually facilitates the effective use of such incentives, since most of the financing for medical and social services that the ACT target population receives goes through the Regional Health and Social Service Boards. At least two approaches may be considered.

The first is to "threaten" relevant providers with budget cuts if they fail to set up ACT programs. Ontario has used this approach, although in a quite flexible way. In practice, budgets are rarely cut, and the Ontario Ministry of Health has accepted a number of programs that deviate significantly from the ACT model, providing they represent progress in the right direction (Duff Sprague, Ontario Ministry of Health, personal communication, October 1997).

A second approach would be to give certain service sector providers a recurring budget with which to finance ACT. This could be done in one of at least two ways. First, as is often done in the United States, a call for bids could be issued, with the budget going to the bidder who seems capable of offering the best services for the designated amount. Alternatively, one or more potential service providers could be identified in each service sector to work with the regional board to develop the necessary programs. This second option is doubtless more compatible with current practice in Quebec and Canada.

If such a recurring budget is provided, substantial reductions in hospital days may be expected and should be taken into account. In the state of Michigan, where there are now more than 100 (small) ACT teams for 10 million inhabitants, a new program receives a one-year transitional budget, after which it is assumed that the savings generated by reduced hospital days will be sufficient to finance the program.[33] A working capital fund could be set up to finance the implementation of five or six new programs each year, after which their funding would come from the hospitals whose services are affected by the new programs.

9.3 Give preference to programs where ACT team members work closely with hospital workers

The number of psychiatric beds per capita is higher in Quebec than in the rest of Canada, and is associated with long lengths of stay: approximately 25 days on average in general and psychiatric hospitals in 1996-97 ([115], Table 7.2).

[33] Catherine Ferguson, Michigan Department of Community Health, personal communication, October 1997.

To reduce hospital days substantially, it is preferable that the ACT team be in a position to influence length of stay as well as the decision to hospitalize. The ACT team should therefore maintain a trusting relationship with hospital personnel, so that it can participate in discharge planning and thus accelerate patients' return to the community.

9.4 Give ACT teams technical support by providing access to clinical consultants

Starting an ACT team is no simple task. A number of clinical and organizational questions arise: How should team members respond to this or that set of circumstances? How is work to be shared among team members? How should the daily team meeting be structured? Experience with internal hospital procedures, or even with less intensive case management, does not provide the answers. Less obviously, experience has shown that initial training is generally not sufficient either, as new difficulties arise over the course of the program. Technical support is therefore needed.

Ideally, this technical support should not be linked to the evaluation process, so that ACT team members will perceive those providing the support as allies, and do not hesitate to seek them out for help and advice. This support should probably be centralized at the provincial level, or at least shared among several Regional Boards at once, since there are few people with the necessary expertise to provide it.

One may also consider recognizing particular ACT teams as models and training sites. Such teams could receive a special grant from the Ministry of Health and Social Services. This grant would serve two purposes: on the one hand, it would provide the teams with the resources to maintain a high level of expertise through regular contacts with leading-edge programs inside and outside of Quebec; on the other hand, it would free team staff to take time off to train other teams (both at start-up and later) and also provide the team with the extra capacity to regularly welcome staff from other teams for practical training. Such teams could be identified using a call for proposals: interested teams could submit evidence attesting to their fidelity to the ACT model, and their capacity to keep abreast of changes and to provide quality training.

Another method—both simple and relatively inexpensive—to help provide this technical support would be to facilitate the translation and distribution, at a modest price, of two recently published and long-awaited manuals: that of the National Alliance for the Mentally Ill [2], and that of Stein and Santos [101]. The first manual provides most of the information needed to start up a high-fidelity ACT team, patterned after the Madison teams. The second provides information of a more conceptual nature and a broader perspective on the different ways to implement an ACT program. The two books complement each other and together provide, in a clear and organized fashion, much useful information to all who are involved, at one level or another, in providing ACT services.

9.5 Evaluate programs on a regular basis

No matter what kinds of incentives are used, it seems preferable that all programs should be evaluated regularly: annually at first. The Rhode Island programs are evaluated using a two-phase procedure. First, team members fill out a questionnaire. The state evaluator looks over the responses, then comes to the team's office at an agreed-upon date and spends two days with the team obtaining precise information on how the team operates.[34] Regular evaluations of this kind can indicate which programs are functioning

[34] Gloria Mazza, Rhode Island Department of Mental Health, personal communication, February 1998.

well enough to serve as a model for others, and which need to make some adjustments. The difficulties that the latter progr ıs experience may also provide useful lessons for others.

9.6 Increase financing for research into case management services

In spite of the progress made by research on ACT, a number of questions still remain: How can support for family members be improved? Should stabilized clients continue receiving less intensive treatment from their ACT team, or should they be transferred to another kind of service? What is the best way to adapt ACT to a rural setting? These questions, and many others, are partly answered by research conducted elsewhere. However, there are at least three reasons why more high-quality evaluations should be conducted in Quebec.

First, the organizational structure (e.g., prevalence of CLSCs, restrictions imposed by collective agreements), relative costs, and cultural sensibilities in Quebec are in many respects different from those found elsewhere. What may have proved efficacious and cost-effective in other places may not work as well here; conversely, Quebec innovations such as *CICs*, could prove extremely interesting even after rigorous study, and worthy of imitation. One should therefore not rely solely on research from outside the province. Second, research can lead directly to changes in the organization of services, producing greater efficacy and cost-effectiveness. Finally, one might expect that a greater prevalence of experimentation and evaluation could foster a culture of critical self-appraisal, continuous quality improvement and creative thinking.

10. CONCLUSIONS

The conclusions that emerge from the previous sections can be summarized as follows:

- Assertive community treatment is a well-defined treatment model for certain people with severe and persistent mental illness: people whose illness most often includes psychosis, who have important functional limitations, who respond poorly to traditional services, and who are subject to repeated hospitalizations. ACT has been evaluated over 30 times with randomized, pre-post or quasi-experimental research designs, in several countries.

- The results of these evaluations indicate that ACT is clinically superior to standard outpatient after-care, and improves both client and family member satisfaction with services.

- The scientific literature also shows that ACT substantially reduces hospital days, which fits in well with the significant psychiatric bed closures currently taking place in Quebec.

- Moreover, the literature emphasizes ACT's adaptability to a wide range of contexts, and the continual enhancements brought to it by new research.

- Several programs that bear some resemblance to ACT already exist in Quebec. Most of these programs are run by community organizations, a few by CLSCs, and others by hospitals. Two hospital-based programs were examined in this study. Both can be viewed as adaptations of the ACT model. The clinical effects of these programs have not yet been thoroughly documented. Surveys indicate, however, a high rate of client satisfaction with the programs. In addition, the programs have effected substantial reductions in hospital days. These observations lead *CETS* to believe that the model could be successfully integrated into the Quebec health and social services network.

- Some people in Quebec have expressed a concern that ACT could be excessively coercive. There do exist grounds for such concern, considering the potential for concerted involvement by several staff members in almost all aspects of a client's life. However, clients are unlikely to tolerate a coercive relationship for very long. Moreover, ACT is inherently effective enough to yield significant results while respecting the client's rights and autonomy. It can be viewed as blending the professional skills of psychiatrists, nurses, etc., with the philosophy and approach of community-based organizations – although some degree of risk remains.

- While it is true than an ACT team tries to provide the majority of services directly to the client, it often refers him or her to self-help groups, or community organizations that support various leisure activities. It seeks to strengthen the client's integration into the community, and thus to broaden, not circumscribe, his or her social network.

- ACT's target clientele represents between 0.7 and 1 person in 1,000, or a mere 7 to 10% of the 1% of the population with the most severe and persistent mental illness. For all of Quebec, there would be approximately 5,000 to 7,000 clients, treated by 500 to 700 staff — not counting the 1,300 to 1,800 other staff providing less intensive case management.

- The ACT model requires staff and psychiatrists to adopt new professional roles.

- When adopted in a service area with a sufficiently large population base, ACT reduces costs for the health and social services system.

- The evidence to date does not clearly indicate whether ACT services should be based in hospitals, CLSCs, or community organizations, as long as the principles and modalities of the model are adhered to as closely as possible.

- Certain conditions must be respected if ACT is to be adopted and implemented in an appropriate manner: i.e., that it be available to those who can benefit from it, that the programs be implemented in a manner consistent with current research evidence, and that further research be conducted here so that the effectiveness and appropriateness of programs in the Quebec context are maximized. These measures include the establishment of clear practice guidelines, the introduction of financial incentives to stimulate the start-up of new programs, the provision of training and technical support for teams, the establishment of mechanisms for program evaluation, and adequate support for research.

CETS therefore believes that the ACT model deserves to be adopted on a wider scale, in as faithful a manner as possible. It believes that incentive and support mechanisms should be put in place that will promote this end, and that more research and evaluation should be carried out. Research and evaluation are necessary to verify the effectiveness of existing programs, make necessary adjustments, and optimize adaptations of the model to the Quebec context.

APPENDIX A: CALCULATION OF UNIT COST

This appendix describes, in summary fashion, the methods used to calculate the unit costs of the different mental health hospital services costed in this study, such as the cost of an acute inpatient day in a psychiatry department, of a service unit at the outpatient clinic, or of a visit to the emergency room, the day centre, or the day hospital. For some hospitals, we also measured the unit costs of community treatment services.

We used the average cost as a measure of the unit cost. To do this, we started with the hospital financial reports (labeled AS-471), that all Quebec hospitals must prepare according to norms set by the Quebec Ministry of Health and Social Services. These reports break down costs by cost centre. Cost centres can be divided into two main groups: overhead (support) cost centres (i.e., administration, laundry), and clinical activity cost centres (i.e., acute inpatient psychiatric care, outpatient clinic). By dividing the cost of a clinical activity centre by the number of units measured (as listed in the AS-478 activity reports) we easily obtain one component of the average cost, often called the direct cost.

Two difficulties then arose. First, we needed a method for allocating overhead costs to the various clinical activity cost centres. Second, we needed to differentiate between appointments with a nurse, social worker, etc., in order to obtain the unit costs for different outpatient clinic services – but the AS-478 reports only provide the total number, either of appointments or (since two years ago) of patients, without differentiating by patient.

Four basic methods may be used for allocating overhead costs: direct allocation, step-down allocation, step-down with iterations and simultaneous allocation [45]. These four methods represent progressively more sophisticated ways of accounting for the inter-relations among overhead cost centres. For example, not only clinical activity cost centres drive central administration costs; overhead cost centres, such as laundry, also create more work and therefore cost for central administration. Conversely, however, laundry costs are hardly affected by central administration costs. Housekeeping costs are somewhat different: they increase with the square footage of administration offices. Although direct allocation is a common method for determining hospital costs in Quebec, it does not take these interrelations into account [4].

The step-down method takes these into account to some extent, although without reflecting reciprocal influence (as with central administration and housekeeping). Thus, this method attributes part of the costs from general overhead cost centres (such as central administration) to other overhead cost centres (such as housekeeping) before allocating the costs from such areas as food services to clinical activity cost centres such as intensive care. This method thus requires that the direction of influence be in one direction only: in general, in the direction that maximizes the attributed cost. This method is used by American hospitals to prepare the Medicare Cost Reports they must submit to the federal government. The other two methods acknowledge reciprocal influence, but are more difficult to apply. We decided that the increased precision thus obtained would not justify the additional effort required [45].

In order to calculate unit costs for outpatient visits by type of professional, we needed information from the cost centre and accounting department managers of the institutions in ques-

tion. Unfortunately, we were not always able to obtain information with as much precision as we wished. In some cases, we used allocation weights calculated by the Quebec Hospital Association [4]. These weights are most often based on regression analyses and hence reflect an appropriate allocation in "average" cases. When even this method did not yield sufficiently precise information, we had to make some assumptions.

We did not estimate the opportunity cost of buildings and land or, in other words, the value of the foregone benefits from their best *alternative* use [86]. The closure of a certain number of psychiatric beds at one of the cited institutions would most probably not result in the sale of part of the building or land, nor its conversion to another use.[35]

We have also excluded the costs of treating physical illnesses. We reasoned that the cost of treating a client's physical condition would be more or less the same, whether he was treated by an ACT team or by an outpatient clinic with more frequent psychiatric hospitalizations.[36]

We included the cost of medical services billed to the Quebec Health Insurance Board (RAMQ). These costs may be expected to vary depending on the kind of treatment the person received (ACT vs. outpatient clinic-based with more frequent hospitalizations).

Finally, we used 1995-1996 statements, the latest available at the time the analysis was undertaken; the costs cited in this study reflect the value of the dollar at that time.

[35] This touches on a still unresolved debate, namely, whether marginal or average costs should be used. In chapter 7, we took this controversy into account by reducing the average costs of a hospital bed-day by 20% (at the suggestion of Lee Söderstrom, Ph.D., from the Department of Economics at McGill University in Montreal). Ignoring the opportunity cost of the land and buildings, since it reduces the difference between the two costs, can be viewed as another way of taking this controversy into account. The literature suggests that this percentage would represent somewhere around 5% of total cost.

[36] Knapp et al. [60] found that ACT was associated with less frequent visits to family physicians, suggesting that the more intensive nursing attention provided by ACT could reduce long-term costs for physical health care. However, lacking a reliable estimate of its impact, we decided to exclude this effect from our calculations.

APPENDIX B:
ADDITIONAL TABLES

APPENDIX B: ADDITIONAL TABLES

Table B.1. Average annualized costs ($) of resources at *Hôpital Louis-Hippolyte Lafontaine* used by inpatients present on October 23, 1996

	Unit Cost $	Average Annualized Costs of Services Provided*				
		1-30 days (n=35)	31-45 days (n=12)	46-90 days (n=16)	91-183 days (n=117)	184 days (n=6)
Hospital Days at L.-H. Lafontaine						
Short treatment unit	288	$197	$0	$0	$17	$0
Acute psychiatric care	289	5,077	21,002	24,927	62,950	70,739
Acute psycho-geriatric care	268	1,446	0	10,807	15,514	26,481
Hospital residential pavilions	82	0	0	0	1,232	1,947
Total Hospitalizations		*6,720*	*21,002*	*35,724*	*79,713*	*99,167*
Outpatient Clinic Visits						
Psychiatrist	105	400	446	693	160	0
General practitioner	78	22	0	9	9	0
Psychologist	140	121	356	0	0	0
Social worker	140	40	187	157	17	0
Nurse	140	199	168	210	212	0
Guidance counselor	140	0	392	0	0	0
Physiotherapist	140	8	36	123	17	0
Total Outpatient Clinic		*790*	*1 585*	*1 192*	*415*	*0*
Emergency Room (visits)	*270*	*789*	*757*	*772*	*572*	*270*
Total Cost		**$8,299**	**$23,344**	**$37,688**	**$80,700**	**$99,437**

* Note: The data are grouped according to the number of patient hospital days consumed over a six-month period in 1996. The number of patients in each group, as seen in the Table, shows the relative importance of the different groups on that date, but not their relative importance over the course of a year. (Patients with shorter stays are under-represented in such a sample.)

Appendix B : Additional Tables

Table B.2 : Unit costs of the different types of housing used over a six-month period by inpatients present at *Hôpital Louis-Hippolyte Lafontaine* on October 23, 1996, and approximate percentage of nights spent in these types of housing for people with fewer than 45 hospital days per year*

Type of Housing	Percentage of Nights, %	Cost per Night, $
Supervised apartment	3.0	7
Foster home	1.7	17
Half-way house	0	120
Group home	3.1	120
Public nursing home	0	113**
Seniors' residence	3.0	91

* This sample made use of other types of housing, for which we did not calculate the unit cost: independent housing, staying with a friend, shelter for the homeless, general hospital and homelessness. Respectively, these represent 80.1%, 7.6%, 0%, 0.1% and 1.4% of nights in this sample.

** A person staying at a public nursing home only receives $145 in welfare benefits; this is reflected by an $18/night reduction in the unit cost.

Table B.3 Estimated annual costs of resource use at Montreal General Hospital's Department of Psychiatry, for a stratified random sample of 25 patients*

		Average Cost of Services Provided, $		
	Unit Cost, $	Single Hospitalization of 45 days or Less (n=9)	Single Hospitalization of More Than 45 days** (n=6)	Two or More Hospitalizations (n=10)
Hospitalizations (days)	407	6,500	34,350	45,210
Emergency Room (visits)	430	563	563	1,695
Outpatient Clinic (visits)				
Psychiatrist	106	117	141	616
General practitioner	80	0	0	0
Nurse	65	0	247	38
Social work technician	178	8	93	35
Physiotherapist	77	8	0	46
Other***	97	0	0	62
Total cost of outpatient clinic		*133*	*481*	*797*
Day centre (days)	74	0	908	1,156
Total Cost		**7,296**	**36,302**	**48,858**

Notes:

* These data reflect service utilization in the absence of any ACT-like program (i.e., in this case, *Community Link)*

** Patients hospitalized for the whole year (5 out of 387) were not included in the sample.

*** This category groups visits to one or more professionals whose nature we were not able to determine. We then used as the unit cost the average of the unit costs of nurses, psychologists, social workers and occupational therapists, weighted by the relative frequencies of visits to these different types of professionals.

APPENDIX C:
CALCULATIONS UNDERLYING TABLE 7.4

APPENDIX C. CALCULATIONS UNDERLYING TABLE 7.4

The examples given in Tables 7.1 and 7.2 can be generalized by means of a simple equation:

$$\text{Net cost per client} = \{(N \times p) \times C_D\} - C_{ACT}$$

N: represents the average number of previous hospital days per year for clients treated by an ACT program;

p: the proportion of hospital days averted as a result of the ACT program's services (i.e., how effective the program is in reducing the number of hospital days),

C_D: the cost deemed saved for each hospital day averted, and

C_{ACT} : the cost per day of the ACT program.

In other words, if the net cost of an ACT program to the health care system is to be zero, the minimum average number of previous hospital days that clients in the program need to have (MANHD) is:

$$\text{Minimum average number of hospital days, MANHD} = C_{ACT}/(p \times C_D)$$

According to this equation, if we suppose that an ACT team costs $8,250 per client per year, that each hospital day averted reduces expenses (taking professional medical services and external replacement housing costs into account) by $350 per day, and that the ACT team reduces the number of hospital days by 50%, then clients in the program need only have an average of at least 47 previous hospital days for the net cost of the program to be zero. Table 7.4 shows how this minimum average number of hospital days varies according to the values of p and C_D, assuming that ACT services cost $8,250 per client per year.

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